



PROGRAM MANAGER FOR ROCKY MOUNTAIN ARSENAL

U.S. ARMY
MATERIEL COMMAND

— COMMITTED TO PROTECTION OF THE ENVIRONMENT —

DRAFT FINAL
DETAILED ANALYSIS
OF ALTERNATIVES REPORT
VERSION 2.0
SOILS DAA
VOLUME IV of VII

JULY 1993
CONTRACT NO. DAAA 05-92-D-0002

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Doc. 05-92-D-0002-1

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 07/00/93		3. REPORT TYPE AND DATES COVERED
4. TITLE AND SUBTITLE DETAILED ANALYSIS OF ALTERNATIVES REPORT, DRAFT FINAL, VERSION 2.0			5. FUNDING NUMBERS	
6. AUTHOR(S)			DAAA05 92 D 0002	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) EBASCO SERVICES, INC. DENVER, CO			8. PERFORMING ORGANIZATION REPORT NUMBER 93200R05	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) RUST ENVIRONMENT AND INFRASTRUCTURE, INC. ENGLEWOOD, CO			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES STORED IN BUILDING 618. SEE THE FINAL RTIC #95290R01.				
12a. DISTRIBUTION/AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) THE CONDUCT OF THE FEASIBILITY STUDY (FS) UNDER CERCLA IS ACCOMPLISHED IN TWO STEPS. THE FIRST STEP, THE DEVELOPMENT AND SCREENING OF ALTERNATIVES (DSA), INVOLVES IDENTIFYING AND SCREENING A BROAD SELECTION OF ALTERNATIVES THAT ACHIEVE THE REMEDIAL ACTION OBJECTIVES (ROAS). THE SECOND STEP IS THE DAA. THE OBJECTIVES OF THE DAA INCLUDE THE FOLLOWING: (1) PROVIDE A MORE DETAILED DEFINITION OF EACH ALTERNATIVE RETAINED IN THE DSA, AS NECESSARY, WITH RESPECT TO THE VOLUMES OR AREAS OF CONTAMINATED MEDIA TO BE ADDRESSED, THE TECHNOLOGIES TO BE USED, AND ANY PERFORMANCE REQUIREMENTS ASSOCIATED WITH THOSE TECHNOLOGIES. (2) ASSESS EACH ALTERNATIVE AGAINST THE DAA EVALUATION CRITERIA IDENTIFIED IN THE NATIONAL CONTINGENCY PLAN AND DEFINED IN U.S. EPA GUIDANCE (EPA 1988). (3) PERFORM A COMPARATIVE ANALYSIS AMONG THE ALTERNATIVES TO EVALUATE THE RELATIVE PERFORMANCE OF EACH ALTERNATIVE WITH RESPECT TO EACH EVALUATION CRITERION. (4) SELECT A PREFERRED ALTERNATIVE FOR EACH MEDIUM GROUP BASED ON THE COMPARATIVE ANALYSIS. THE DAA REPORT CONSISTS OF SEVEN VOLUMES. VOLUME I - EXECUTIVE				
14. SUBJECT TERMS SOIL, WATER, STRUCTURES, ARARS, DAA, LAND USE, UXO			15. NUMBER OF PAGES	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

TECHNICAL SUPPORT FOR
ROCKY MOUNTAIN ARSENAL

19960122 002

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CONTRACT NO. DAAA 05-92-D-0002

Prepared by:

EBASCO SERVICES INCORPORATED
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Prepared for:

U.S. Army Program Manager's Office for the
Rocky Mountain Arsenal

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LIST OF ACRONYMS AND ABBREVIATIONS

µg/l	micrograms per liter
3-D	three-dimensional
ACGIH	American Conference of Governmental Industrial Hygienists
ACM	asbestos-containing material
AMC	Army Materiel Command
AOC	Area of Contamination
AOPs	advanced oxidation processes
AR	Army Regulations
ARARs	applicable or relevant and appropriate requirements
Army	U.S. Army
atm-m ³ /mol	atmospheres per cubic meters per mole
ATP	Anaerobic Thermal Processor
ATSDR	Agency for Toxic Substances and Disease Registry
BCY	bank cubic yard
BDAT	best demonstrated available technology
BEST	Basic Extraction Sludge Treatment
BFI	Browning Ferris Industries
BOD	Biological Oxygen Demand
BTEX	benzene, toluene, ethylbenzene, and xylenes
BTU	British thermal unit
CAMU	Corrective Action Management Unit
CAR	Contamination Assessment Report
CCA	chromated-copper-arsenate
CCR	Code of Colorado Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CLC2A	Chloroacetic Acid
cm/sec	centimeters per second
cm ²	centimeters squared
COC	contaminant of concern
CPE	chlorinated polyethylene
CPRP	Chemical Personnel Reliability Program
CRL	certified reporting limit
CSI	Conservation Services, Inc.
CSPE	chlorosulfonated polyethylene
CWA	Clean Water Act
CY	cubic yards
DA	Department of the Army
DAA	Detailed Analysis of Alternatives
DADS	Denver Arapahoe Disposal Service, Inc.
db(A)	decibels
DBCP	dibromochloropropane
DCPD	dicyclopentadiene
DDE	dichlorodiphenylethane
DDT	dichlorodiphenyltrichloroethane
DHHS	Department of Health and Human Services
DIMP	diisopropylmethyl phosphorate
DNAPL	dense nonaqueous phase liquid
DOD	Department of Defense

DOT	Department of Transportation
DRE	destruction removal efficiency
DRMO	Defense Reutilization and Marketing Office
DSA	Development and Screening of Alternatives
EA	Endangerment Assessment
Ecology	U.S. Ecology, Inc.
EDSVEP	Enhanced Deep Soil Vapor Extraction Process
ENSCO	Environmental Systems Company
Envirosafe	Envirosafe Services of Idaho, Inc.
EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
ERC	Ecological Risk Characterization
ESSVEP	Enhanced Surface Soil Vapor Extraction Process
ETTS	Ecotechniek Thermal Treatment System
FC2A	fluoroacetic acid
FFA	Federal Facility Agreement
FML	flexible membrane liner
fpm	feet per minute
FRP	fiber - reinforced plastic
FS	feasibility study
ft/day	feet per day
ft	feet or foot
ft ³	cubic feet
GAA	granulated activated alumina
GAC	granular activated carbon
GB	isopropylmethylphosphonosfluoridate (nerve agent-sarin)
gpm	gallons per minute
H:V	horizontal to vertical
H ₂ O ₂	hydrogen peroxide
HBr	hydrogen bromide
HCCPD	hexachlorocyclopentadiene
HCL	hydrochloric acid
HCPD	Hexachloro pentadiene
HDPE	high-density polyethylene
HE	high explosive
HEP	habitat evaluation protocol
HEPA	high efficiency particulate
HF	hydrofluoric acid
Hg	mercury
HHEA	Human Health Exposure Assessment
HHRC	Human Health Risk Characterization
HI	hazard index
ICP	inductively coupled plasma
ICS	Irondale Containment System
IDLH	Immediately Dangerous to Life and Health
IEA	Integrated Endangerment Assessment
IITRI	IIT Research Institute
IRA	interim response action
IT	International Technology
IWT	International Waste Technologies
K _{oc}	partition coefficient
kw	Kilowatt
kWh	Kilowatt hour

L	Lewisite
lbs	pounds
lbs/acre	pounds per acre
LCY	loose cubic yards
LCY/hr	loose cubic yards per hour
LDR	land disposal restriction
LF	Linear Foot
LNAPL	light nonaqueous phase liquid
LT ³	Low-Temperature Thermal Treatment
LTTA	Low-Temperature Thermal Aeration
mg/l	micrograms per liter
mg/cm ³	milligrams per cubic centimeter
mg/m ³	milligram per cubic meter
mg/kg	milligrams per kilogram
mg/l	microgram per liter
MKE	Morrison-Knudsen Engineering
ml/g	milliliters per gram
mm	millimeters
MMBTU	million British thermal units
mph	miles per hour
MTR	minimum technology requirement
NaOH	sodium hydroxide
NBCS	North Boundary Containment System
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NWBCS	Northwest Boundary Containment System
O&M	operations and maintenance
OAS	Organizations and State
°C	degrees Centigrade
OCP	organochlorine pesticides
OCPD	dicyclopentadiene
°F	degrees Fahrenheit
OPHGB	organophosphorus compounds, GB-agent related
OPHP	organophosphorus Compounds; pesticide related
OSCH	organosulfur compounds; herbicide related
OSCM	organosulfur Compounds; mustard agent related
OSHA	Occupational Health and Safety Administration
PAHs	polynuclear aromatic hydrocarbons
PBC	probabalistic biota criteria
PCB	polychlorinated biphenyls
pcf	pounds per cubic foot
PCP	pentachlorophenol
PEC	plume evaluation criteria
PKPP	potassium pyrophosphate
ppb	parts per billion
PPE	personal protective equipment
PPLV	preliminary pollutant limit value
ppm	parts per million
PRG	preliminary remediation goal
psi	pounds per square inch
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
RAO	remedial action objectives

RCRA	Resource Conservation and Recovery Act
RF	radio frequency
RI	Remedial Investigation
RISR	Remedial Investigation Summary Report
RMA	Rocky Mountain Arsenal
ROD	Record of Decision
RPO	representative process option
SACWSA	South Adams County Water and Sanitation District
SAR	Study Area Report
SARA	Superfund Amendments and Reauthorization Act
SCC	Secondary Combustion Chamber
SEC	Site evaluation criteria
SF	square feet
Shell	Shell Oil Company
SHO	Semivolatile halogenated organics
SITE	Superfund Innovative Technology Evaluation
STC	Silicate Technology Corporation
SVE	soil vapor extraction
SVOCs	semivolatile organic compounds
SY	square yards
T.DI.	Services HT-5
TBC	to be considered
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TEA	triethylamine
TEC	Target Effluent Concentrations
TIS	transportable incineration system
TMV	toxicity, mobility, and volume
TOC	total organic carbon
tpd	tons per day
TSCA	Toxic Substances Control Act
TSD	Treatment Storage and Disposal
TSMG	two-step geometric mean
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPCI	U.S. Pollution Control, Inc.
UV	ultraviolet
UXO	unexploded ordnance
VAO	volatile aromatic organic compounds
VHC	volatile hydrocarbon compounds
VHO	volatile halogenated organics
VOC	volatile organic compound
VX	ethyl s-dimethyl aminoethyl methyl phosphonothiolate (nerve agent)
WES	Waterways Experimental Station

APPENDIX A

VOLUME AND AREA ESTIMATES

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LIST OF ACRONYMS AND ABBREVIATIONS

As	arsenic
BCY	bank cubic yard
CLC2A	chloroacetic acid
COCs	contaminants of concern
CY	cubic yard
DBCP	dibromochloropropane
DICPD	dicyclopentadiene
DAA	Detailed Analysis of Alternatives
FC2A	fluoroacetic acid
ft	feet
Hg	mercury
OCP	organochlorine pesticide
OSCM	organosulfur compound - mustard related
PRG	preliminary remediation goal
RI	remedial investigation
RISR	Remedial Investigation Summary Report
RMA	Rocky Mountain Arsenal
SAR	study area report
SEC	site evaluation criteria
SY	square yard
UXO	unexploded ordnance
VHC	volatile hydrocarbon

A.1 INTRODUCTION

The analysis of remedial alternatives requires an estimate of the amount of soil that each alternative must address. Most remedial alternatives evaluated in the DAA use a volume estimate for developing costs, but some alternatives are based on area (e.g., capping, landfarm/agricultural practices). This appendix explains estimation methods and summarizes volume and area estimates that were generated for Rocky Mountain Arsenal (RMA) soils exceedance sites.

As discussed in Section 3.0, 111 exceedance sites have been identified as requiring consideration for remediation in the DAA. These sites were organized into 27 subgroups. Exceedance volumes and areas were estimated separately for each of the sites. The estimates for each site were summed into medium group or subgroup totals to allow sites with similar remediation characteristics to be evaluated together.

The medium subgroups are classified into four categories based on the type of criteria that are exceeded. These categories are the Potential Unexploded Ordnance (UXO) Presence, Potential Agent Presence, Biota Exceedance, and Human Health Exceedance Categories. The 27 medium subgroups are listed below by exceedance category.

Potential UXO Presence Category

- Munitions Testing Medium Group

Potential Agent Presence Category

- North Plants Subgroup
- Toxic Storage Yards Subgroup

Biota Exceedance Category

- Lake Sediments Medium Group
- Surficial Soils Medium Group
- Ditches/Drainage Areas Medium Group

Human Health Exceedance Category

- Basin A Medium Group
- Basin F Wastepile Medium Group
- Secondary Basins Subgroup
- Former Basin F Subgroup
- Basin F Exterior Subgroup
- Sanitary/Process Water Sewers Subgroup
- Chemical Sewers Subgroup
- Complex Trenches Subgroup
- Shell Trenches Subgroup
- Hex Pit Subgroup
- Sanitary Landfills Medium Group
- Section 36 Lime Basins Subgroup
- Buried M-1 Pits Subgroup
- South Plants Central Processing Area Subgroup
- South Plants Ditches Subgroup
- South Plants Tank Farm Subgroup
- South Plants Balance of Areas Subgroup
- Buried Sediments Subgroup
- Sand Creek Lateral Subgroup
- Section 36 Balance of Areas Subgroup
- Burial Trenches Subgroup

Site Evaluation Criteria (SEC) used to determine Biota exceedance volumes, Human Health exceedance volumes, and Principal Threat exceedance volumes are listed in Table 1.4-1. Principal Threat exceedance volume is a specific category of exceedance and is contained within the Human Health exceedance volume.

A.2 ESTIMATION FOR POTENTIAL UXO AND AGENT PRESENCE CATEGORIES

The sites included in the UXO or agent exceedance categories potentially contain agent and/or UXO but do not exceed Biota or Human Health Site Evaluation Criteria (SEC) except as isolated exceedances. Area estimates for sites in these groups are determined from boundaries on maps presented in the Remedial Investigation Summary Report (RISR) (EBASCO 1992/RIC 92017R01). Potential depth of contamination for the agent category sites are based on the distribution of analytes as presented in the study area reports (SARs) (EBASCO 1989a-g). The potential depth of contamination used for UXO calculations is assumed to be 2 ft except for the

impact area of Site ESA-4A which is assumed to be 6 ft. These depths are used with the area estimates to calculate potential volumes for the UXO and agent categories. The estimated volume of soil reflects a 0.1 percent factor to account for actual agent or UXO occurrence within the potential soils volume. Further characterization for both the agent and UXO categories is ongoing and will be used for remedial design purposes.

A.3 ESTIMATION FOR BIOTA AND HUMAN HEALTH EXCEEDANCE CATEGORIES

Exceedance volume estimates for sites in the Biota or Human Health Exceedance Categories are generated by one of two methods. The distributions of contaminants in larger sites are modeled using a commercial software package (TECHBASE). Modeled sites account for the majority of contaminated area and volume in the Biota and Human Health Exceedance Categories and include the basins, lakes, South Plants complex, and other selected sites. Section A.4 presents a detailed description of the TECHBASE modeling procedure and resulting estimates.

Volume and area estimates from the SARs (EBASCO 1989a-g) are used for small sites or sites that are not considered amenable to modeling by computer. In general, if modeling is subject to great uncertainty due to the particular physical characteristics of a site or limited data availability, volume estimates from the SARs are utilized. This is the case for disposal trenches/pits or landfills, where the contaminants are highly heterogenous; for the chemical and sanitary sewers where there is highly uneven spatial contamination; and for ditches where the site configuration is extremely long and narrow. The specific assumptions made in calculating estimates for these various sites are detailed in each SAR document (EBASCO 1989a-g).

The exceedance volume estimates for sites in the Biota Exceedance Category are determined by computer or from the SARs. In both methods, the area exceeding the biota SEC for each COC is also estimated, and a total biota exceedance area for the site is generated by overlapping the exceedance areas for individual contaminants. As discussed in Section 7.1, three sites included in the Lake Sediments Medium Group also contain limited volumes exceeding Human Health SEC. These volumes are estimated from computer models of the sites by the method discussed in Section A.4.

Exceedance volumes are generated for human health exceedance sites based on the Human Health SEC which consists of a 10^{-4} cumulative cancer risk and a noncarcinogenic hazard index of one. Exceedance volumes between the soil surface and a depth of 10 ft (or to the water table if shallower than 10 ft) are estimated independently for each COC exceeding the Human Health SEC within a site. Under both estimation methods used, contaminant-specific exceedance volumes are subsequently combined to generate additive totals for contaminant groups (i.e., OCPs), contaminant types (i.e., organic or inorganic), and for the total contaminants. These totals are calculated by taking into account overlapping volumes among contaminants in order to avoid counting the same soil volume more than once in the total volume estimates. Estimates of the surface area corresponding to the total human health exceedance volumes (0 to 10 ft in depth) are also generated for each site.

Volumes and areas are also estimated for the Principal Threat Criteria of 1000 times PRGs. Estimation methods are the same as for the Human Health SEC. For the Complex Trenches subgroup, principal threat areas are considered to be all anomalies in which trenches were discovered. Volumes are estimated using the anomaly area projected over the trench depth as determined in the RI. The depth used for Anomaly G is based on the maximum of encountered depths for other anomalies investigated.

Portions of human health exceedance sites do not exceed Human Health SEC but are of concern because of potential agent presence, potential UXO presence, or biota exceedances. The volumes and areas that potentially contain UXO or agent are estimated by the same approach used for the agent and UXO categories discussed in Section A.2.0. The parts of these sites that exceed Biota SEC but do not exceed Human Health SEC are estimated as outlined earlier in this section for biota exceedance sites. It should be clearly noted, therefore, that exceedances for any category (biota, UXO or agent) may be present within the human health exceedance medium groups.

A.4 COMPUTERIZED MODELING AND ESTIMATION PROCEDURES

Computerized models provide the capability to readily generate exceedance volumes for individual contaminants and totals for combinations of contaminants under a variety of scenarios

in an efficient and timely manner. Because of this need to modify scenarios in the DAA, a computer software program was selected to model the exceedance volumes. TECHBASE, developed by MINEsoft, Ltd., is a relational database management system that features statistics, graphics, and two- and three-dimensional modeling capabilities. This software is used to create models of soil contamination at the RMA sites where modeling is considered appropriate.

A database is set up for each site, and the analytical data from the remedial investigation (RI) soil borings are loaded into the TECHBASE databases. A three-dimensional model is created for each site, bounded vertically by the ground surface and the depth of the water table, and bounded laterally by the site boundary as defined in the RI. Setting up a site model in TECHBASE requires defining various model parameters as described below.

A.4.1 MODELING PARAMETERS

Each model can be visualized as a three-dimensional stack of blocks; the number and dimensions of the blocks are specified by the user. Block sizes are chosen to be a constant 1 ft in thickness with side length equal to at most one-third the average distance between soil borings. This block sizing is chosen to allow for a distribution of model values between the boring locations. Block sizes range from 10 ft square to 75 ft square in the RMA sites modeled.

A concentration for each contaminant is then estimated for each block in the model using the analytical data collected during the RI. The TECHBASE routine searches within a predefined volume around each block for detected concentrations in soil borings as well as samples below the certified reporting limit. An inverse distance squared algorithm is used to calculate the concentration at the center of the block based on all data found in the search volume (i.e., measured concentrations at a distance of $2X$ ft from the center of the block were weighted one-quarter as much as concentrations at X ft from the center of the block). The search volume is defined based on the density of analytical data available for a site. The vertical search radius is chosen as the average distance between samples in a standard soil boring (5 ft). The horizontal search radius is chosen as twice the approximate average distance between soil borings in a site (150 ft to 1200 ft in the sites modeled), which allows for complete site coverage by the model.

A.4.2 VOLUME ESTIMATION TECHNIQUE

The soil exceedance volumes in the 0 to 10 ft (or water table) depth range are calculated for each analyte by using a filter to identify the number of blocks in the model in exceedance and multiplying this number by the volume of a block. The total soil volume in exceedance for all contaminants in a site is calculated accounting for additivity among contaminants. Additivity accounts for the potential cumulative effect of multiple contaminants, none of which, by themselves, generate exceedances. The calculated concentration of each contaminant in a block is divided by the Human Health PRG to produce an exceedance factor. These exceedance factors are summed separately for carcinogenic contaminants and for noncarcinogenic contaminants. If the respective additive sum is greater than one for noncarcinogenic contaminants or 100 for carcinogenic contaminants, then that block is counted into the total human health exceedance volume for the site. This procedure for handling additivity among contaminants is based on the methodology used in the Exposure Assessment (EBASCO 1990/RIC 90277R06).

Biota exceedances are also estimated to account for additivity. Calculated concentrations for biota contaminants of concern in a block are divided by the Biota PRG to produce exceedance factors. If the sum of the exceedance factors for the biota COCs in a block is greater than ten, then the volume contained in the block is counted as being in exceedance of biota criteria. Principal threat volumes are estimated using the same additivity exceedance. Model blocks counted as principal threat exceedances are those with the additive sum of exceedance factors greater than 1000 for either carcinogenic or noncarcinogenic contaminants.

Areas for both biota and human health sites are determined by projecting exceedance blocks to the surface and multiplying the number of projected blocks by the area of a block. In some cases the human health areas reported are adjusted to incorporate some biota area since remedial alternatives would not be applied to the actual irregular shape of the exceedance area. This results in the inclusion of biota exceedance areas within the human health area totals in some sites. Perimeters are estimated from these adjusted projected areas and can exhibit the same incorporation of biota exceedance area.

It is important to note that the inverse distance squared algorithm used in TECHBASE to estimate analyte concentrations between soil borings is one of many possible ways to generate a contaminant model and estimate exceedance volumes for the sites. For example, the TECHBASE method described in this section tends to be more conservative and generate larger exceedance volumes than a two-dimensional Thiessen polygon method of extending contamination halfway between soil boring hits and nonhits. For contaminants with low SEC (which account for the majority of exceedance volume), the inverse distance squared algorithm will tend to extend the area of exceedance more than halfway to adjacent non-exceedance borings, resulting in a larger estimate of exceedance area and volume than the half-distance Thiessen polygon approach. The TECHBASE methodology resulting in conservative estimates is considered appropriate for alternative evaluation in the DAA.

A.5 EXCEEDANCE VOLUMES AND AREAS

Tables A-1 through A-5 summarize the areas and volumes that were calculated for the 111 exceedance sites and present subtotals by medium subgroups. Table A-1 lists the exceedance volume and area estimates for medium/subgroups in the Potential Agent Presence and Potential UXO Presence Categories in addition to portions of the Human Health Exceedance Category. Table A-2 presents the exceedance areas and volumes for the medium groups in the Biota Exceedance Category. The table lists volume estimates for the OCP contaminant group, total organic, total inorganic and overall exceedance volumes for each site and medium group in the Biota Exceedance Category. Table A-3 lists the human health exceedance volume estimates for OCPs, volatiles (VHC), fluoroacetic acid (FC2A), total organic, total inorganic, and overall exceedance volumes for each site and medium group/subgroup in the Human Health Exceedance Category. Table A-4 presents the exceedance volumes and areas for the Principal Threat scenario and Table A-5 presents the volume exceeding only the Biota SEC in sites in the Human Health Exceedance Category. Table A-6 lists the areal extent of exceedances for human health areas and combined biota plus human health areas for each site and medium group/subgroup in the Human Health Exceedance Category.

A.6 REFERENCES

RIC 89166R08

EBASCO (Ebasco Services Incorporated) 1989a, May. Final Remedial Investigation Report Volume XII, Western Study Area. Version 3.3, Volumes I through V.

RIC 89166R03

EBASCO 1989b, June. Final Remedial Investigation Report Volume VI, Southern Study Area. Version 3.3, Volumes I through V.

RIC 89166R02

EBASCO 1989c, June. Final Remedial Investigation Report Volume VII, Eastern Study Area. Version 3.3, Volumes I through IV.

RIC 89166R04

EBASCO 1989d, July. Final Remedial Investigation Report Volume VIII, South Plants Study Area. Version 3.3, Volumes I through VI.

RIC 89166R05

EBASCO 1989e, July. Final Remedial Investigation Report Volume IX, North Plants Study Area. Version 3.3, Volumes I through III.

RIC 89166R06

EBASCO 1989f, July. Final Remedial Investigation Report Volume X, Central Study Area. Version 3.3, Volumes I through VIII.

RIC 89166R07

EBASCO 1989g, July. Final Remedial Investigation Report Volume XI, North Central Study Area. Version 3.3, Volumes I through XIV.

RIC 90277R06

EBASCO 1990, September. Final Human Health Exposure Assessment for Rocky Mountain Arsenal; Volume VII, Summary Exposure Assessment.

RIC 92017R01

EBASCO 1992, January. Final Remedial Investigation Summary Report, Version 3.2.

Table A-1. Potential UXO Presence and Agent Presence Areas and Volumes

Medium Group or Subgroup	SARSite Number	Potential Agent Area (sy)	Depth (ft)	Estimated Volume (cy)	Potential UXO Area (sy)	Depth (ft)	Estimated Volume (cy)
Munitions Testing Medium Group	ESA-1a	--	--	--	8,133	2	5
	ESA-1b	--	--	--	6,592	2	4
	ESA-1c	--	--	--	5,442	2	4
	ESA-1d	--	--	--	8,044	2	5
	ESA-4a	--	--	--	205,954	6	412
	ESA-4b	--	--	--	29,541	2	20
	ESA-2c	--	--	--	2,589	2	2
	ESA-2d	--	--	--	1,186	2	1
Subtotal					270,000		450
Toxic Storage Yards Subgroup	ESA -3a	10,566	5	18	--	--	--
	ESA-3b	121,411	5	202	--	--	--
	ESA-3c	73,776	5	123	--	--	--
	ESA-3d	32,600	5	54	--	--	--
	ESA-3e	574	5	1	--	--	--
	ESA-3f	9,791	5	16	--	--	--
	ESA-3g	1,554	5	3	--	--	--

Table A-1. Potential UXO Presence and Agent Presence Areas and Volumes

Medium Group or Subgroup	SAR Site Number	Potential Agent Area (sy)	Depth (ft)	Estimated Volume (cy)	Potential UXO Area (sy)	Depth (ft)	Estimated Volume (cy)
North Plants Subgroup	ESA-3h	3,452	5	6	--	--	--
	ESA-3i	14,826	5	24	--	--	--
	Subtotal	270,000	5	450			
	NPSA-3	3,444	10	12	--	--	--
	NPSA-5	3,074	10	10	--	--	--
	NPSA-6	2,778	10	9	--	--	--
	Bldg 1601	10,837	5	18	--	--	--
	Bldg 1606	4,998	5	8	--	--	--
	Bldg 1607	3,199	5	6	--	--	--
	Subtotal	28,000		63			
Basin A Medium Group							
	NCSA-1a	404,728	5	676	120,987	2	81
	NCSA-1e	13,423	5	22	13,423	2	9
	Subtotal	420,000		700	130,000		90

Table A-1. Potential UXO Presence and Agent Presence Areas and Volumes

Medium Group or Subgroup	SAR Site Number	Potential Agent Area (sy)	Depth (ft)	Estimated Volume (cy)	Potential UXO Area (sy)	Depth (ft)	Estimated Volume (cy)
Complex Trenches Subgroup	CSA-1c	374,538	10	1,248	374,538	10	1,248
Chemical Sewers Subgroup	CSA-3	8,200	2	60	--	--	--
	NPSA-1	16,900	2	110	--	--	--
	SPSA-10	49,000	3	470	--	--	--
	Subtotal	74,000		640			
Section 36 Lime Basins Subgroup	NCSA-1b	33,870	8	90	--	--	--
Buried M-1 Pits Subgroup	SPSA-1e	8,600	10	29	--	--	--
South Plants Central Processing Area Subgroup	SPSA-1a	86,519	10	288	--	--	--

Table A-1. Potential UXO Presence and Agent Presence Areas and Volumes

Medium Group or Subgroup	SAR Site Number	Potential Agent Area (sy)	Depth (ft)	Estimated Volume (cy)	Potential UXO Area (sy)	Depth (ft)	Estimated Volume (cy)
South Plants Balance of Areas Subgroup	SPSA-1b	25,759	10	86	--	--	--
	SPSA-1g	3,556	10	12	--	--	--
	SPSA-5b	13,204	10	44	--	--	--
	SPSA-7c	--	--	--	14,667	10	49
	Subtotal	43,000		140	15,000		49
Section 36 Balance of Areas Subgroup	CSA-1b	74,056	10	247	75,204	2	50
	CSA-2A	6,185	5	10	--	--	--
	CSA-4	8,037	5	13	134,067	2	89
	Subtotal	89,000		270	210,000		89
Burial Trenches Subgroup	ESA-2a	--	--	--	163,347	10	544
	ESA-2c	7,079	5	12	7,079	2	5
	Subtotal	7,100		12	170,000		550
	Total	1,400,000		3,600	1,200,000		2,600
							SOILS DAA

Medium Group or Subgroup	SARSite Number	Potential Agent Area (sy)	Depth (ft)	Estimated Volume (cy)	Potential UXO Area (sy)	Depth (ft)	Estimated Volume (cy)
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ft - feet
 cy-cubic yards
 sy - square yards
 UXO - unexploded ordnance

Note: The estimated volumes for agent and UXO presence use a 0.1% factor to estimate the occurrence of agent and UXO within the potential area.

Table A-2. Exceedance Volumes and Areas for Biota Exceedance Category

Medium Group	SARSite Number	Source of Estimate	Exceedance Area (sq)	OCPS	Exceedance Volumes (bcy) Organic	Inorganic	Total	Predominant COCs
Lake Sediments								
	SSA-1b	Computer	94,000	94,815	94,815	54,722	93,425	OCPs, Mercury
	SSA-1c	Computer	130,000	55,093	55,093	54,722	115,926	OCPs, Mercury
	SSA-1e	Computer	110,000	2,593	2,593	91,481	96,667	Mercury
	NCSA-7	SAR/RI	1,944	3,117	3,117	0	3,117	Dieldrin
	Subtotal		340,000	160,000	160,000	200,000	310,000	
Surficial Soils								
	NCSA-1g	Inferred	63,000	11,000	11,000	0	11,000	Inferred OCPs
	Surf. Soils	Computer	5,500,000	814,815	814,815	0	814,815	Endrin, Dieldrin
	Subtotal		5,500,000	830,000	830,000	0	830,000	
Ditches/Drainage Areas								
	CSA-2b	SAR/RI	222	81	81	67	148	Dieldrin, Mercury
	ESA-6c	SAR/RI	170	0	0	1,056	1,056	Arsenic
	NCSA-1C	SAR/RI	2,700	2,385	2,385	1,215	2,667	OCPs, Arsenic
	NCSA-1d	SAR/RI	5,196	4,006	4,006	0	4,006	Dieldrin, Endrin

Table A-2. Exceedance Volumes and Areas for Biota Exceedance Category

Page 2 of 2

Medium Group	SAR Site Number	Source of Estimate	Exceedance Area (sy)	OCPs	Exceedance Volumes (bcy) Organic	Inorganic	Total	Predominant COCs
	NCSA-1f	SAR/RI	1,700	3,184	3,184	1,971	3,184	OCPs, Arsenic
	NCSA-2d	SAR/RI	510	751	751	685	751	Dieldrin, Mercury
	NCSA-5d	SAR/RI	2,611	1,741	1,741	0	1,741	Dieldrin
	NPSA-8C	SAR/RI	1,835	1,223	1,223	0	1,223	OCPs
	NPSA-8c	SAR/RI	1,650	0	0	1,100	1,100	Arsenic
	NPSA-9f	SAR/RI	390	0	0	651	651	Arsenic
	SSA-2a	SAR/RI	6,033	7,968	7,968	0	7,968	OCPs
	SSA-2c	SAR/RI	683	456	456	0	456	DDE
	WSA-1f	SAR/RI	138	93	93	0	93	Aldrin, Dieldrin
	Subtotal		25,000	22,000	22,000	7,100	25,000	
	Total		5,900,000	1,000,000	1,000,000	210,000	1,200,000	

Subtotals and totals rounded to 2 significant figures.

Predominant COCs column indicates contaminant(s) driving volume at each site.

bcy - bank cubic yard

COCs - contaminants of concern

DDE - dichlorodiphenylethane

OCPs - organochlorine pesticides

SAR/RI - Study Area Reports issued as part of the Remedial Investigation (EBASCO, 1989a-g)

sy - square yard

Note: The assumed depth of exceedance of Biota Site Evaluation Criteria are as follows:

Lake Sediments: Exceedance depth based on actual data to a maximum of 5 ft.

Surficial Soils: Exceedance depth of 6 inches.

Ditches/Drainage Areas: Exceedance depth based on actual data to a maximum of 10 ft.

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria

Page 1 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	OCP	VHC	Exceedance Volumes by Contaminant Group (bcy)	Organic	Inorganic	Total	Predominant COCs
Basin A Medium Group	NCSA-1a	Computer	261,574	0	327,000	556		327,500	OCPs
	NCSA-1e	Computer	548	0	548	133		2,700	Chlordane, As
	Subtotal		260,000	0	330,000	700		330,000	
Basin F Wastepile Medium Group		Survey	580,000	580,000	580,000	0		580,000	OCPs, VHC, CLC2A
Secondary Basins Subgroup	NCSA-2a	Computer	6,296	0	6,667	0		6,667	OCPs
	NCSA-2b	Computer	0	0	0	0			
	NCSA-5a	Computer	89	0	6,400	0		104	OCPs
	Subtotal		6,400	0	6,800	0		6,800	
Former Basin F Subgroup									
	NCSA-3	Computer	366,667	100,093	700,731	0		701,111	OCPs, CLC2A

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria

Page 2 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
			OCP	VHC	Organic	Inorganic	
Basin F Exterior Subgroup	NCSA-4a	Computer	1,389	0	3,380	0	Isodrin 3,380
	NCSA-4b	Computer	75,312	0	76,146	0	OCPs 76,146
	Subtotal		77,000	0	80,000	0	80,000
Chemical Sewers Subgroup	CSA-3	SAR/RI	0	--	5,500	0	CLC2A 5,500
	NCSA-6a	SAR/RI	17,700	--	17,700	0	OCPs 17,700
	NCSA-6b	SAR/RI	0	--	1,500	0	CLC2A 1,500
	NPSA-1	SAR/RI	0	--	11,000	0	CLC2A 11,000
	SPSA-10	SAR/RI	46,500	46,500	46,500	46,500	OCPs, DBCP Hg, As, CLC2A 46,500
	Subtotal		64,000	47,000	82,000	47,000	82,000

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria Page 3 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Volumes by Contaminant Group (bcy)				Total	Predominant COCs
			OCP	VHC	Organic	Inorganic		
Sanitary/Process Water Sewers Subgroup	NCSA-8a	SAR/RI	59,600	--	59,600	18,000	59,600	Dieldrin, Lead
	SPSA-11	SAR/RI	17,000	--	17,000	0	17,000	Dieldrin
	SPSA-12	SAR/RI	78,000	--	78,000	0	78,000	Dieldrin
	WSA-7a	SAR/RI	0	--	0	0	0	None
	Subtotal		150,000	0	150,000	18,000	150,000	
Complex Trenches Subgroup	CSA-1c	SAR/RI	470,000	0	470,000	470,000	470,000	OCPs, Arsenic, Mercury
Shell Trenches Subgroup	CSA-1a	SAR/RI	100,000	0	100,000	0	100,000	OCPs, DBCP
Hex Pit Subgroup	SPSA-1f	SAR/RI	3,300	0	3,300	3,300	3,300	OCPs

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria Page 4 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	OCP	VHC	Organic	Inorganic	Total	Predominant COCs
Sanitary Landfills Medium Group	CSA-1d	SAR/RI	60,310	0	60,310	0	60,310	OCPs
	ESA-2b	SAR/RI	210,645	0	210,645	0	210,645	Inferred OCPs
	SSA-4	SAR/RI	10,469	0	10,469	0	10,469	OCPs
	WSA-2	SAR/RI	0	0	0	57,926	57,926	Chromium
	WSA-3c	SAR/RI	0	0	0	695	695	Cadmium
	WSA-5a	Inferred	29,200	0	29,200	29,200	29,200	Inferred Isodrin, Lead, Chromium
	WSA-5c	Inferred	7,467	0	7,467	7,467	7,467	Inferred Isodrin, Lead, Chromium
Section 36 Lime Basins Subgroup	WSA-5d	SAR/RI	15,050	0	15,050	50,359	50,359	Isodrin, Lead, Chromium
	Subtotal		330,000	0	330,000	150,000	430,000	
	NCSA-1b	Computer	82,801	0	106,000	0	106,000	OCPs
Buried M-1 Pits Subgroup	SPSA-1e	Computer	337	1,611	2,259	29,063	29,063	Arsenic, Mercury

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria Page 5 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Volumes by Contaminant Group (bcy)				Total	Predominant COCs
			OCF	VHC	Organic	Inorganic		
South Plants Central Processing Area Subgroup	SPSA-1a	Computer	361,542	43,606	400,000	58,000	437,274	OCPs, Arsenic, Mercury
South Plants Ditches Subgroup		Computer	57,481	0	60,030	415	60,030	OCPs, Chlordane
South Plants Tank Farm Subgroup		Computer	0	119,230	119,230	0	119,230	DCPD (Indirect)
South Plants Balance of Areas Subgroup		Computer	33,556	0	62,000	112,000	151,000	OCPs, Chromium
Buried Sediments Subgroup	SSA-3a	Computer	0	0	0	0	0	Biota exceedances only for OCPs
	SSA-3b	Computer	12,967	0	26,800	0	26,800	Dieldrin
	Subtotal		13,000	0	27,000	0	27,000	

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria

Page 6 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Volumes by Contaminant Group (bcy)				Total	Predominant COCs
			OCP	VHC	Organic	Inorganic		
Sand Creek Lateral Subgroup	NCSA-5c	SAR/RI	2,703	0	2,703	0	2,703	Dieldrin
	NPSA-4	SAR/RI	130	0	130	0	130	CLC2A
	NCSA-5b	Inferred	2,667	0	2,667	0	2,667	Chlordane
	SSA-2b	SAR/RI	5,850	0	5,850	1,704	7,554	OCPs
	WSA-6a	SAR/RI	0	0	0	512	512	Chromium, Lead
	Subtotal		11,000	0	4,000	2,200	14,000	
Section 36 Balance of Areas Subgroup								
	CSA-1b	Computer	63,843	0	150,949	0	150,949	OCPs, Chlordane
	CSA-2a	SAR/RI	0	0	0	0	0	None
	CSA-4	Computer	0	0	0	0	0	None
	Subtotal		64,000	0	150,000	0	150,000	

Table A-3. Exceedance Volumes for Human Health Exceedance Category: Human Health Site Evaluation Criteria Page 7 of 7

Medium Group or Subgroup	SARSite Number	Source of Estimate	Exceedance Volumes by Contaminant Group (bcy)				Total	Predominant COCs
			OCP	VHC	Organic	Inorganic		
Burial Trenches Subgroup								
	ESA-2a	SAR/RI	0	0	0	31,156	31,156	Chromium, Lead
	ESA-2c	SAR/RI	0	0	0	0	0	None
	Total		3,000,000	890,000	3,800,000	920,000	4,100,000	

Subtotals and totals rounded to 2 significant figures.
Predominant COCs column indicates contaminant(s) driving volume at each site.

As - arsenic
bcy - bank cubic yard
CLC2A - chloroacetic acid
COCs - contaminants of concern
DCPD - dicyclopentadiene
DBCP - dibromochloropropane
Hg - Mercury
OCPs - organochlorine pesticides
SAR/RI - Study Area Reports issued as part of the Remedial Investigation (EBASCO, 1989a-g)
VHC - volatile hydrocarbon

Table A-4. Exceedance Areas and Volumes for Human Health Exceedance Category: Principal Threat Criteria

Page 1 of 3

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Area (sy)	Exceedance Volumes by Contaminant Group (bcy)		Total	Predominant COCs
				OCPs	Inorganic		
Basin A Medium Group	NCSA-1a	Computer	17,000	4,074	0	4,630	OCPs
	NCSA-1e	Computer	0	0	0	0	
	Subtotal		17,000	4,100	0	4,600	
Basin F Wastepile Medium Group			75,000	580,000	0	580,000	OCPs, DBCP, CLC2A
Former Basin F Subgroup	NCSA-3	Computer	109,769	157,037	0	223,796	Aldrin, Dieldrin
Basin F Exterior Subgroup	NCSA-4a	Computer	0	0	0	0	
	NCSA-4b	Computer ¹	213,687	33,854	0	34,271	Dieldrin
	Subtotal		210,000	34,000	0	34,000	

Table A-4. Exceedance Areas and Volumes for Human Health Exceedance Category: Principal Threat Criteria

Medium Group or Subgroup	SARSite Number	Source of Estimate	Exceedance Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Organic	Inorganic		
Chemical Sewers Subgroup	SPSA-10	SAR/RI	49,000	47,000	47,000	47,000	47,000	OCPs, DBCP CLC2A, As, Hg
Complex Trenches Subgroup	CSA-1c	SAR/RI	120,000	362,000	362,000	402,000	440,000	OCPs, As, Hg
Shell Trenches Subgroup	CSA-1a	SAR/RI	32,000	100,000	100,000	0	100,000	OCPs, DBCP
Hex Pit Subgroup	SPSA-1f	SAR/RI	1,000	3,300	3,300	3,300	3,300	OCPs
Section 36 Lime ¹ Basins Subgroup	NCSA-1b	Computer	13,000	1,134	19,000	0	19,000	OCPs
Buried M-1 Pits Subgroup	SPSA-1e	Computer	8,600	0	0	29,000	29,000	Arsenic

Table A-4. Exceedance Areas and Volumes for Human Health Exceedance Category: Principal Threat Criteria Page 3 of 3

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Exceedance Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Organic	Inorganic		
South Plants Central Processing Area Subgroup		Computer	180,000	302,630	318,040	3,913	322,430	OCPs, Arsenic
South Plants Ditches Subgroup		Computer	12,000	6,281	6,281	0	6,281	Aldrin
South Plants Balance of Areas Subgroup		Computer	17,000	19,000	19,000	0	19,000	Aldrin, Dieldrin
	Total		850,000	1,600,000	1,600,000	490,000	1,800,000	

1 Principal Threat volume will not be addressed due to uncertainty in locating and excavating contamination.

Subtotals and totals rounded to 2 significant figures.

Predominant COCs column indicates the contaminant(s) driving volume at each site.

As - arsenic
bcy - bank cubic yard
CLC2A - chloroacetic acid
DBCP - dibromochloropropane
Hg - mercury
OCPs - organochlorine pesticides
sy - square yard
SAR/RI - Study Area Reports issued as part of te Remedial Investigation 9EBASCO, 1989a-g)

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 1 of 7

Medium Group or Subgroup	SARSite Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCBs	Arsenic	Mercury		
Basin A Medium Group	NCSA-1a	Computer	286,257	282,963	245,185	56,019	480,370	As, OCP
	NCSA-1e	Computer	8,358	13,541	14,593	14,696	15,911	OCPs, As, Hg
	Subtotal		290,000	300,000	260,000	71,000	500,000	
Basin F Wastepile Medium Group		Survey	0	0	0	0	0	None
Secondary Basins Subgroup	NCSA-2a	Computer	363,024	221,944	11,481	0	248,981	OCPs
	NCSA-2b	Computer	38,694	18,015	3,970	0	21,807	OCPs
	NCSA-5a	Computer	18,301	11,970	6,133	104	18,281	OCPs
	Subtotal		420,000	250,000	22,000	104	290,000	
Former Basin F Subgroup	NCSA-3	Computer	57,000	80,648	9,444	0	89,167	OCPs

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 2 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Arsenic	Mercury		
Basin F Exterior Subgroup	NCSA-4a	Computer	13,582	51,088	0	0	51,088	OCPs
	NCSA-4b	Computer	2,011,872	379,688	0	0	400,833	OCPs
	Subtotal		2,000,000	430,000	0	0	450,000	
Chemical Sewers Subgroup	CSA-3	SAR/RI	0	0	0	0	0	None
	NCSA-6a	SAR/RI	0	0	0	0	0	None
	NCSA-6b	SAR/RI	0	0	0	0	0	None
	NPSA-1	SAR/RI	0	0	0	0	0	None
	SPSA-10	SAR/RI	0	0	0	0	0	None
	Subtotal							

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 3 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Arsenic	Mercury		
Sanitary/Process Water Sewers Subgroup	NCSA-8a	SAR/RI	0	0	0	0	0	None
	SPSA-11	SAR/RI	0	0	0	0	0	None
	SPSA-12	SAR/RI	0	0	0	0	0	None
	WSA-7a	SAR/RI	19,300	19,300	0	0	19,300	Dieldrin
	Subtotal		19,000	19,000			19,000	
Complex Trenches Subgroup	CSA-1c	SAR/RI	160,000	37,254	23,893	0	39,000	OCPs, Arsenic
Shell Trenches Subgroup	CSA-1a	SAR/RI	0	0	0	0	0	None
Hex Pit Subgroup	SPSA-1f	SAR/RI	0	0	0	0	0	None

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 4 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Arsenic	Mercury		
Sanitary Landfills Medium Group	CSA-1d	SAR/RI	3,214	1,454	0	1,722	3,176	OCPs, Hg
	ESA-2b	SAR/RI	0	0	0	0	0	None
	SSA-4	SAR/RI	0	0	0	0	0	None
	WSA-2	SAR/RI	0	0	0	0	0	None
	WSA-3c	SAR/RI	0	0	0	0	0	None
	WSA-5a	Inferred	0	0	0	0	0	None
	WSA-5c	Inferred	0	0	0	0	0	None
	WSA-5d	SAR/RI	0	0	0	0	0	None
	Subtotal		3,200	1,500	0	1,700	3,200	
Section 36 Lime Basins Subgroup	NCSA-1b	Computer	11,000	82,245	49,745	21,806	92,801	OCPs
Buried M-1 Pits Subgroup	SPSA-1e	Computer	0	0	0	0	0	None

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 5 of 7

Medium Group or Subgroup	SARSite Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCPs	Arsenic	Mercury		
South Plants Central Processing Area Subgroup	SPSA-1a	Computer	3,600	179,852	61,570	48,652	179,852	OCPs
South Plants Ditches Subgroup		Computer	38,000	132,089	0	11,556	137,363	OCPs
South Plants Tank Farm Subgroup		Computer	21,000	32,000	0	0	32,000	OCPs
South Plants Balance of Areas Subgroup		Computer	500,000	485,807	178	36,622	569,244	OCPs
Buried Sediments Subgroup	SSA-3a	Computer	4,254	0	0	8,333	8,333	Hg
	SSA-3b	Computer	44,571	138,033	0	54,633	138,033	OCPs
	Subtotal		47,000	140,000	0	63,000	150,000	

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 6 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)			Total	Predominant COCs
				OCs	Arsenic	Mercury		
Sand Creek Lateral Subgroup	NCSA-5b	Inferred	1,245	1,008	519	519	1,008	OCs
	NCSA-5c	SAR/RI	24,500	18,740	0	0	18,740	OCs
	NPSA-4	SAR/RI	0	0	0	0	0	None
	SSA-2b	SAR/RI	7,112	5,410	0	0	5,410	OCs
	WSA-6a	SAR/RI	0	0	0	0	0	None
	Subtotal		33,000	25,000	520	520	25,000	
Section 36 Balance of Areas Subgroup								
	CSA-1b	Computer	129,252	130,671	0	20,833	152,593	OCs
	CSA-2a	SAR/RI	2,583	1,722	0	0	1,722	Dieldrin
	CSA-4	Computer	386,549	83,981	0	0	84,074	OCs
	Subtotal		520,000	220,000	0	21,000	240,000	
Burial Trenches Subgroup								
	ESA-2a	SAR/RI	0	0	0	0	0	None
								SOILS DAA

Table A-5. Exceedance Areas and Volumes for Human Health Exceedance Category: Biota Site Evaluation Criteria Page 7 of 7

Medium Group or Subgroup	SAR Site Number	Source of Estimate	Excess Biota Area (sy)	Exceedance Volumes by Contaminant Group (bcy)	Total	Predominant COCs
	ESA-2c	SAR/RI	80	0	134	As
	Subtotal		80	0	130	
	Total		4,200,000	2,400,000	280,000	2,800,000

Subtotals and totals rounded to 2 significant figures.

Predominant COCs column indicates contaminant(s) driving volume at each site.

As - arsenic
 bcy - bank cubic yard
 COCs - contaminants of concern
 Hg - Mercury
 OCPs - organochlorine pesticides
 SAR/RI - Study Area Reports issued as part of the Remedial Investigation (EBASCO, 1989a-g)

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SAR Site Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Basin A Medium Group				
	NCSA-1a	286,257	278,208	564,465
	NCSA-1e	8,358	2,524	10,882
	Subtotal	290,000	280,000	560,000
Basin F Wastepile Subgroup				
	Subtotal	0	75,000	75,000
Secondary Basins Subgroup				
	NCSA-2a	363,024	9,986	373,010
	NCSA-2b	38,694	0	38,694
	NCSA-5a	18,301	403	18,301
	Subtotal	420,000	10,000	430,000
Former Basin F Subgroup				
	NCSA-3	57,000	366,913	420,000

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SARSite Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Basin F Exterior Subgroup				
	NCSA-4a	13,582	4,887	18,469
	NCSA-4b	2,011,872	255,223	2,267,095
	Subtotal	2,000,000	260,000	2,300,000
Chemical Sewers Subgroup				
	CSA-3	0	8,200	8,200
	NCSA-6a	0	23,600	23,600
	NCSA-6b	0	2,200	2,200
	SPSA-10	0	49,000	49,000
	Subtotal	0	100,000	100,000

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SAR Site Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Sanitary/Process Water Sewers Group				
	NCSA-8a	0	51,900	51,900
	WSA-7a	19,300	0	19,300
	SPSA-11	0	25,000	25,000
	SPSA-12	0	118,000	118,000
	Subtotal	19,000	190,000	210,000
Complex Trenches Subgroup				
	CSA-1c	160,000	190,000	350,000
Shell Trenches Subgroup				
	CSA-1a	0	32,000	32,000
Hex Pit Subgroup				
	SPSA-1f	0	1,000	1,000

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SAR Site Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Sanitary Landfills Medium Group				
	CSA-1d	3,214	23,105	26,319
	ESA-2b	0	58,280	58,280
	WSA-2	0	17,378	17,378
	WSA-3c	0	1,042	1,042
	WSA-5a	0	10,950	10,950
	WSA-5c	0	2,800	2,800
	WSA-5d	0	20,884	20,884
	SSA-4	0	13,136	13,136
	Subtotal	3,200	150,000	150,000
Section 36 Lime Basins Subgroup				
	NCSA-1b	11,000	52,000	63,000
Buried M-1 Pits Subgroup				
	SPSA-1e	0	8,600	8,600

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SARSite Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
South Plants Central Processing Area Subgroup	SPSA-1a	3,600	220,000	220,000
South Plants Ditches Subgroup		38,000	55,000	99,000
South Plants Tank Farm Subgroup		21,000	73,000	94,000
South Plants Balance of Areas Subgroup		500,000	120,000	620,000
Buried Sediments Subgroup	SSA-3a	4,254	0	4,254
	SSA-3b	44,571	10,189	54,760
	Subtotal	49,000	10,000	59,000

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups

Medium Group or Subgroup	SARSite Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Sand Creek Lateral Subgroup	NCSA-5b	1,245	1,600	2,845
	NCSA-5c	24,500	3,166	27,666
	NPSA-4	0	389	389
	SSA-2b	7,112	4,778	11,890
	WSA-6a	0	778	778
	Subtotal	33,000	11,000	44,000
Section 36 Balance of Areas Subgroup	CSA-1b	129,252	122,202	251,454
	CSA-2a	2,583	0	2,583
	CSA-4	386,549	0	386,549
	Subtotal	520,000	120,000	640,000

Table A-6. Exceedance Areas for Human Health Exceedance Category Medium Subgroups Page 7 of 7

Medium Group or Subgroup	SARSite Number	Excess Biota Area (sy)	Human Health Area (sy)	Biota plus Human Health Area (sy)
Burial Trenches Subgroup	ESA-2a	0	42,900	42,900
	ESA-2c	80	0	80
	Subtotal	80	43,000	43,000
	Total	4,200,000	2,400,000	6,500,000

Subtotals and totals rounded to 2 significant figures

sy - square yard

APPENDIX B

COST ESTIMATES FOR REMEDIAL ALTERNATIVES

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SEWER SYSTEMS GROUP - CHEMICAL SEWERS SUBGROUP

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SOUTH PLANTS GROUP - SOUTH PLANTS DITCHES SUBGROUP

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Table B4.16-13a	Alternative 13a: Direct Thermal Desorption (Direct Heating)
Table B4.16-16a	Alternative 16a: In Situ Physical/Chemical Treatment (Vacuum Extraction)
Table B4.16-19a	Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

SOUTH PLANTS GROUP - SOUTH PLANTS BALANCE OF AREA SUBGROUP

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Table B4.17-1a	Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)
Table B4.17-3	Alternative 3: Landfill (On-Post Landfill)
Table B4.17-6	Alternative 6: Caps/Covers (Clay/Soil Cap)
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BURIED SEDIMENT/DITCHES GROUP - BURIED SEDIMENT SUBGROUP

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Table B4.18-3	Alternative 3: Landfill (On-Post Landfill)
Table B4.18-6	Alternative 6: Caps/Covers (Clay/Soil Cap)
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Table B4.18-13a	Alternative 13a: Direct Thermal Desorption (Direct Heating)
Table B4.18-19a	Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

BURIED SEDIMENT/DITCHES GROUP - SAND CREEK LATERAL SUBGROUP

Table B4.19-1	Alternative 1: No Additional Action (Provisions of FFA)
Table B4.19-3	Alternative 3: Landfill (On-Post Landfill)
Table B4.19-6g	Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation
Table B4.19-13a	Alternative 13a: Direct Thermal Desorption (Direct Heating)

UNDIFFERENTIATED GROUP - SECTION 36 BALANCE OF AREA SUBGROUP

Table B4.22-1	Alternative 1: No Additional Action (Provisions of FFA)
Table B4.22-2	Alternative 2: Access Restrictions (Modifications to FFA)
Table B4.22-3	Alternative 3: Landfill (On-Post Landfill)
Table B4.22-6	Alternative 6: Caps/covers (Clay/Soil Cap)
Table B4.22-6g	Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation
Table B4.22-13a	Alternative 13a: Direct Thermal Desorption (Direct Heating)
Table B4.22-19a	Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

UNDIFFERENTIATED GROUP - BURIAL TRENCHES SUBGROUP

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APPENDIX B5-COST ESTIMATES FOR PREFERRED ALTERNATIVES

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LIST OF ACRONYMS AND ABBREVIATIONS

A	annual cost type (costs incurred over more than one year)
BCY	bank cubic yard (i.e., volume of in-place soil)
CY	cubic yard
EA	each
GAL	gallon
LCY	loose cubic yards (i.e., volume of excavated soil)
LF	linear feet
LS	lump sum cost type (costs incurred in one year)
RCRA	Resource Conservation and Recovery Act
SY	square yards
UXO	unexploded ordnance
YR	year

Prefixes for exceedance categories used at the beginning of every cost item description shown on the cost estimates:

A-	agent
B-	biota
H-	human health
HA-	human health and agent
HAU-	human health, agent, and UXO
HB-	human health and biota
HBA-	human health, biota, and agent
HBAU-	human health, biota, agent, and UXO
U-	UXO

B.1.0 INTRODUCTION

This appendix contains the cost estimates for the Soils DAA (munitions, agent, biota and human health exceedance categories). A cost estimate was developed for every alternative considered in the Soils DAA report. The alternatives were developed in a manner consistent with EPA cost estimating guidelines and are estimated to be within +50 percent and -30 percent of the total alternative cost. In accordance with guidance, a present worth analysis was used to present all estimates in a consistent manner. The cost estimates provide a means to compare one alternative to another to determine if one is more cost effective, however, the present worth analysis is not consistent with Army budget requirements and the cost estimates developed in the DAA are not to be considered government budget estimates. Once the final alternatives are selected in the ROD, a detailed government estimate should be prepared for each alternative selected.

A total of 146 cost estimates were prepared for the Soils DAA (Tables B1.1-U1 through B4.23-13). The format for the cost estimates was developed to provide a realistic estimate of costs given the uncertainties still inherent at this stage of the Feasibility Study. Many forms of uncertainty exist in the estimates due to the development stage of some of the proposed technologies, the final design of the remedy, annual inflation rates, and availability of resources. Other forms of uncertainty are presented in the discussion of indirect costs below. The following sections explain the format of the cost estimate tables and the methodology for development of the unit rates and indirect cost factors that appear in the tables.

Following the 146 cost comparison estimates, an alternative was selected from each subgroup and a separate cost estimate is provided for the 27 preferred alternatives. During the development of the 146 estimates, certain assumptions were made on the sizing of equipment and the total treatment volumes to optimize the usage of equipment. Following the selection of alternatives, the volumes initially estimated for each process were revised based on the alternative selected. The unit costs were therefore revised, and the new cost tables for the 27 preferred alternatives are provided following the main section of tables (Tables B5.1-U4a through B5.23-3). These

alternative costs present a more realistic cost for the preferred alternatives than the comparison tables, developed solely to evaluate alternatives. The same uncertainties apply, however, the unit costs are more appropriate.

B.2.0 FORMAT FOR COST ESTIMATE TABLES

The soils cost estimates presented in this appendix are divided into multiple sections based on the type of cost. These sections are divided into three main groups: Capital costs, O&M Operations costs, and O&M Long-Term Activities costs. These main groups are further divided into:

- Direct Capital Costs
- Indirect Capital Costs
- Direct Subcontract Capital Costs
- Indirect Subcontract Capital Costs
- Direct O&M Costs (Operations)
- Indirect O&M Costs (Operations)
- Direct Subcontract O&M Costs (Operations)
- Indirect Subcontract O&M Costs (Operations)
- Direct O&M Costs (Long-Term Activities)
- Indirect O&M Costs (Long-Term Activities)

Direct capital costs are those incurred to prepare for remediation of the contaminated soils, such as the construction of a landfill or water treatment facility. Direct O&M costs (Operations) are those costs incurred to actually remediate the contaminated soils, such as excavation of soils and placement in a landfill. Direct subcontract capital costs are costs incurred by specialty subcontractor for the construction of major treatment facilities such as an incineration facility. Direct subcontract O&M costs are operation's costs incurred by these specialty subcontractors during the treatment of contaminated soils.

O&M (Long-Term Activities) are those costs incurred for monitoring and/or routine maintenance after remediation is accomplished. An example of long-term O&M is monitoring and maintenance of a landfill.

Direct costs include costs for the accomplishment of the activity in the field. Indirect costs are explained in Section B4.0 include:

- Mobilization/Demobilization
- Indirects, Overhead, and Profits
- Engineering Design
- Resident Engineering
- Contingency

It should be noted, these estimates are structured solely to represent a comparative cost between site-wide alternatives and not as stand alone estimates. Caution should be exercised in comparing individual alternative costs such as engineering design; resident engineering; indirects, overhead, and profits since these cost represent only a comparative percentage of any individual alternative. Prior to implementation of the preferred alternatives developed in this document it will be necessary to re-evaluate the total estimated cost to provide a more detailed cost assessment.

The headings across the top of each cost estimate are explained as follows:

Cost Item: Each horizontal line represents a unit operation and its associated direct cost. The cost item begins with a prefix designating which exceedance category the unit rate is addressing (e.g., potential agent presence, biota exceedance, human health exceedance, and/or potential UXO presence).

Cost Type: There are two choices: 1) "LS" for lump sum for a unit operation which occurs in only one year, or 2) "A" for annual cost for a unit operation which occurs in more than one year.

Start Year: The starting year for the unit operation. Ordinal numbers are used to specify the calendar year with year 1 representing 1995.

End Year: The ending year for the unit operation. Note that no ending year is specified for the lump sum cost type. Ordinal numbers are used to specify the calendar year with year 1 representing 1995.

1992 (\$)

Unit Cost: The unit cost for the particular unit operation in 1992 dollars.

Units: The units associated with the 1992 (\$) Unit Cost.

Quantity: The quantity for which each unit operation will act upon.

Units: The units associated with the Quantity.

Volume

Factor: The volume factor accounts for any expansion or reduction of a volume quantity if appropriate. An example is the expansion of solidified soil since 1 BCY expands to 1.20 BCY. (The volume factor equals 1.000 for all other cost items which has no effect on the computed costs.)

Mileage

Factor: The mileage factor specifies the round trip mileage for each transportation cost item. (The mileage factor equals 1.000 for all non-transportation cost items which has no effect on the computed costs.)

Other

Factor: This factor is reserved for miscellaneous factors for which it would have been wasteful of presentation space to include a separate column for each. An example is odor control for which costs were increased by 20 percent (Other Factor = 1.2) to account for maintaining daily cover to minimize odor generation. (The other factor equals 1.000 for all other cost items which have no effect on the computed costs.)

Description: A description associated with the Other Factor.

1995 (\$)

Annual Cost: These annual costs are presented only for the O&M (Long-Term Activities) portion of the cost estimates. These values are for informational purposes only and they provide only an approximation of the annual cost of the O&M (Long-Term Activities) after remediation has finished. Note that each cost item

may have a different time of application thereby rendering the sum of the annual cost an approximate figure.

1995 (\$)

Total Cost: The Total Cost in 1995 dollars is calculated by multiplying the following:

- 1992 (\$) Unit Cost
- Quantity
- Volume Factor
- Mileage Factor
- Other Factor
- Single Payment Compound Amount Factor to convert the 1992 (\$) Unit Cost to a 1995 (\$) Unit Cost using a 4.5 percent escalation rate. This factor equals 1.141.

1995 (\$)

PW Cost: The Present Worth Cost in 1995 dollars is calculated by applying the appropriate fraction of the 1995 (\$) Total Cost to the specified years, then discounting the applied value at each year back to Year 1 (1995) using a 5 percent discount rate (OMB, 1992).

Explanations for calculations for all subtotals and all indirect costs are given on the cost estimate tables in the form of alphabetical references to computed values.

B.3.0 UNIT RATE DEVELOPMENT

Each cost estimate contains a number of detailed line items. The resulting cost associated with each line item results from multiplying a quantity, a unit rate and volume, mileage, and other factors. The rationale for the development of unit rates used in the cost estimates are described in the following sections.

B.3.1 No Additional Action and Institutional Controls

A number of process options are evaluated for no action and institutional controls alternatives. The line items for no action do not involve any capital, operations, or long-term costs. These are used as place holders in the cost tables where no additional action is proposed for all or part of a site.

Institutional Controls

Institutional controls can involve several different cost items depending on the site. The estimated operations cost for fencing is \$15.00/LF for installation of fences, gates, and signs. Annual maintenance cost for fences is estimated to be 5 percent of installation cost or \$0.75 LF/YR. Habitat modification includes the cost of mowing, herbiciding, plowing, discing, fertilizing, harrowing, and drill seeding areas to establish grasses that are unappealing to biota. Estimated operations cost for habitat modification is \$0.17/SY spread over three years. Annual long-term maintenance includes mowing and spot herbiciding at an estimated cost of \$0.0057 SY/YR. Public education includes the cost of exhibits, videos, brochures, visitor center, open houses, public meetings, etc. to emphasize the reasons for, and importance of, restricting access to areas where contaminants remain in place at concentrations above acceptable risk levels. Capital costs are estimated to be \$1500/site to establish the education program, with an annual operation cost of \$500/site.

Two cost items are specific to the Basin F Wastepile Medium Group. The cost of modifying the existing blocked sump in the wastepile by installing an adjacent 6-inch inside diameter extraction well is estimated to be \$9,440. The long-term cost for disposal of wastepile leachate is \$18/GAL based on drumming the estimated volume of 50,000 GAL/YR and transporting it to a RCRA incinerator for disposal.

Access restrictions for sewers involves plugging sewer lines and posting of warning signs. Sewer plugging is estimated to cost \$149/CY to mix and pump cement throughout the length of the sewer pipes and manholes. Installation of warning signs every 1000 LF along sewers is estimated to cost \$0.0861/LF with a long-term maintenance cost of 5 percent of installation cost or \$0.0043/LF.

Sites where exceedances of UXO, agent, biota, or human health criteria remain in place are required to have a site review every five years to reassess the contamination present. The review cost is estimated to be \$27,000 total or \$5,400/YR pro-rated over the five year period. Sites with

no action or institutional control alternatives that contain biota or human health exceedances will have long-term soil sampling to monitor natural attenuation/degradation of contaminants and potential contaminant migration. Costs for long-term monitoring are estimated at \$1,790 per sample with the number of samples varying, depending on the area and distribution of contamination in the medium group or subgroup being monitored. Annual soil monitoring costs range from \$7,600 to \$146,000.

B.3.2 Excavation and Transportation

A number of unit rates have been developed for excavation and transportation. These are explained in detailed below.

Conventional Excavation

The unit rate for Excavation of Borrow Material includes the cost of labor and equipment to excavate and load soil from a clean on-post borrow area. The unit rate does not include transportation or dumping and grading the borrow material. The unit rate is estimated to be \$1.89/BCY.

The unit rates for Sewer Excavation (\$3.82/BCY), Ditch Excavation (3.82/BCY), Soil Excavation (\$3.91/BCY), Landfill Excavation (\$3.91/BCY), Excavation of Cover Overburden (\$1.72/BCY), Excavation of Wastepile Overburden (\$1.89/BCY), Excavation of Sewer Overburden (\$1.51/BCY) includes the cost of labor and equipment for excavation of contaminated materials for transport to a treatment unit. These unit rates do not include transportation of the soils. A loss of productivity due to Level C working conditions of between 20 to 25 percent is assumed for cost items which entail excavation of contaminated soils. These cost items also include sampling during excavation and loading the excavated materials into trucks.

The unit rates for excavating soils containing agent and UXO are higher than for the unit costs

for non-agent/UXO material based on lower productivity rates and higher costs for personal protective equipment. The unit costs for Excavation of Soil with Agent(\$4.55/BCY), Excavation of sewers with Agent (\$7.25/BCY), Excavation of UXO Debris from Surface Soil (\$3.91/BCY), assume between 20 to 50 percent loss of productivity compared to non-agent/UXO contaminated material.

Modified Excavation

The capital cost for Wastepile Excavation Including Vapor Controls indicates costs for the fabrication and installation of an air-supported structure to control noxious odors during excavation. This includes costs for fabrication and installation of a scrubber system. The estimated capital cost is \$34,523,250. The operating cost is for excavation of wastepile material, loading soil into a transport vehicle outside the air-supported structure, and operation and maintenance of the air-supported structure pressure fan and air scrubber systems. The operating cost of \$21.53/BCY is based upon an excavation duration of approximately 3 years. The excavation costs for Shell Trenches and Hex Pit Excavation include similar air supported structures (\$10,000,000 and \$500,000 respectively), and the operating costs for these two subgroups (\$88.42/BCY and \$100.07/BCY respectively) include similar operations.

The capital cost for Complex Trench Excavation including Vapor Controls includes purchase and utilization of 20 temporary structures to control volatile emissions during excavation, and also includes the cost of an air emissions control system. These structures can be moved with cranes. The estimated capital cost is \$12,396,000. The operating cost is for excavation and containerization of the contents of the disposal trenches for subsequent transportation and treatment/disposal. The estimated operating cost is \$107/BCY.

Backfill

The unit rate for Backfill of Cover Overburden and Backfill of Wastepile Overburden includes the cost of labor and equipment to spread and compact stockpiled overburden soil into

excavations following removal of contaminated soil. These costs do not include the cost of transporting and dumping of the soil. The estimated cost is \$1.72/BCY. The unit cost for the backfill of sewer overburden is \$1.56/BCY and includes the cost to spread and compact the overburden.

The unit rate for Backfill of Treated Soil (\$1.72/BCY), Backfill of Treated Soils for Sewers (\$1.56/BCY), Grade Filling Prior to Cap with Consolidation Soil (\$3.63/BCY), Grade Filling Prior to Capping with Excavated Soil from Slurry Wall (\$3.63/BCY) includes the cost of labor and equipment to spread and compact contaminated soil prior to capping. These costs do not include the cost of transportation of the contaminated soil. The estimated cost is \$1.70/BCY.

Transportation

The unit rate for Transportation of Contaminated Material includes the cost of labor and equipment to transport contaminated material for on-post treatment or disposal. It includes costs associated with dumping, wheel washing/decontamination, dust suppression, and reduced size loads to prevent spillage. The estimated cost of \$1.07/BCY-load mile is based upon a 2-mile one-way, loaded trip.

The unit rate for Transportation of Clean Material includes the cost of labor and equipment to transport clean material on-post for use as grading fill, soil cover, etc. It also includes costs associated with dumping. The estimated cost of \$0.86/BCY-load mile is based upon a 2-mile one-way, loaded trip.

Dredging

The capital cost for Dredging includes mobilization of the dredge and construction of settling ponds for dewatering of dredged material. The estimated capital cost is \$4,800,000. The operating cost is for labor and equipment to dredge sediments from the lakes and to pump the material to settling/dewatering ponds. The estimated cost is \$9.82/BCY.

UXO Clearance

The cost for UXO Clearance performing field clearance of UXOs using geophysics is a capital cost and is performed in one of two ways. One method is to use only surface geophysics which results in a unit cost of \$0.24/SY. The second method is to perform geophysics and drilling augmented by field and analytical verifications which results in a unit cost of \$0.85/SY. The costs for UXO clearance activities are obtained from the Decontamination Assessment For Land and Facilities at RMA Draft Final Report (D'Appolonia 1984).

Once the area has been cleared and the UXOs have been identified, the UXOs must then be removed and transported to appropriate facilities. The operating cost for UXO removal includes the removal of the UXO and the surrounding one cubic yard of soil. The unit cost for this removal activity is \$70.57/BCY based on excavation costs for digging test pits partially by manual methods. The transportation costs address two different alternatives; On-Post Transportation (Alternative U3); and Off-Post Transportation (Alternative U4). The operating cost for on-post transportation includes the removal of agent-filled UXO from the excavated areas, the associated handling of the agent-filled UXO, the packaging of the agent-filled UXO for separation of the fuse from the agent-filled UXO, then transportation of the fuse for detonation and the agent contaminated agent-filled UXO to the on-post rotary kiln incinerator at a unit cost of \$1012/BCY (note that 1 UXO is assumed to be present within each 1 BCY of soil found to contain UXO). The capital cost for the transportation of the agent-filled UXO to an off-post facility includes the removal of the agent-filled UXO from the excavated areas, the associated handling of the agent-filled UXO, the packaging of the agent-filled UXO for transportation, and the transportation of the agent-filled UXO to an off-post Army facility for the demilitarization of UXO. The facility for the demilitarization of agent-filled UXO is assumed to be the Tooele Army Depot near Tooele, Utah at a unit rate of \$2,200/BCY (note that 1 UXO is assumed to be present within each 1 BCY of soil found to contain UXO). For both transportation costs, it has been assumed that the Army's Technical Escort Unit will handle this aspect of the work and that all of the agent-filled UXO discovered will be able to be packaged and transported to the appropriate facility. All the transportation costs for agent-filled UXO have

been obtained through discussions with the Army's Technical Escort Unit.

The costs for high-explosive (HE) UXO are estimated in a similar manner. The off-post demilitarization of HE-filled UXO is assumed to be conducted at Fort Carson Army Base, near Colorado Springs, Colorado. The transportation costs for HE-filled UXO are based on discussions with the Army's Explosive Ordnance Detail, and it has been assumed that Explosive Ordnance Detail personnel will handle HE-filled UXO.

Dewatering

Dewatering systems will be required to lower groundwater levels prior to excavation in portions of Section 36 to provide a safe working environment during excavation activities. The areas requiring dewatering were determined by comparing excavation depths against both existing water levels and estimated future water levels from the Basin A/South Plants Subregional groundwater model. The estimated future water levels account for the removal of man-made recharge sources (i.e., leaking water lines) which eliminates the need for excavation dewatering in South Plants. The costs of dewatering systems are based on the capital costs for well and piping installation and the operating costs for pumping and water treatment at the CERCLA Wastewater Facility from the Water DAA. The capital costs vary from \$190,000 to \$340,000, and the operating costs vary from \$53,000/yr to \$740,000/yr for the following subgroups/medium groups:

- Basin A Medium Group
- Section 36 Lime Basins Subgroup
- Complex Trenches Subgroup
- Shell Trenches Subgroup
- Section 36 Balance of Areas Subgroup

In addition, dewatering costs will also be required for long-term hydraulic controls associated with slurry walls. The capital and long-term O&M costs are estimated in a similar manner as for excavation dewatering. The capital costs vary from \$160,000 to \$1,000,000, and the long-term O&M costs vary from \$50,000/yr to \$93,000/yr.

B.3.3 Containment

A number of containment process options were considered. The unit rate development for each are described in detail below.

Slurry Walls

The installation of slurry cut-off walls to provide a vertical barrier to horizontal contaminant migration is combined with the installation of a clay/soil cap, which nearly eliminates the potential for infiltration of waters and completely interrupts exposure pathways. The slurry walls are to be keyed six feet into bedrock, and the subsequently placed clay/soil cap will be keyed into the top of the slurry wall. Because depth to bedrock varies from zero to 90 feet, several different types of equipment must be used to excavate the slurry wall trench, each with different capital and operating costs. A large backhoe may excavate up to 20 feet deep. An extended reach backhoe may excavate up to 75 feet deep. A clamshell excavator is needed to trench greater than 75 feet in depth.

Capital costs for this technology include equipment mobilization (Geo-Con 1992). Other components include rental of slurry mixing and pumping equipment, and construction of a slurry pond as discussed in Technology Description Volume. Excavation and installation includes trenching around the perimeter of the site into bedrock, costs of bentonite and clean soil, and placement of the soil/bentonite slurry into the excavated trench (shallow-\$33.41/SY, medium depth-\$47.22/SY, deep-\$99.56/SY). These unit costs, per square yard of one-sided wall face, are based on discussions with Geo-Con, Inc. personnel (Geo-Con 1992), and costs of clean fill are provided by the DAA Technology Description Document. The soils excavated for the slurry wall trenches will be placed within the cell to be capped, graded, and compacted. This unit cost is \$1.70/BCY and is compiled from Means Site Work and Landscape Cost Data (Means 1993).

Clay/Soil Cap

The installation of clay/soil cap to limit infiltration and to interrupt the exposure pathway for humans and biota. Subgrade preparation includes compaction by a sheepsfoot roller at a cost of

\$0.06/SY, taken from Means Site Work and Landscape Cost Data (Means 1993). Each site must be graded and/or crowned to provide positive drainage of rain water. The cost of acquiring and emplacing this fill (\$5.06/BCY) is taken from the Technology Description Volume. The standard clay/soil cap over the human health and biota exceedance areas consists of the following layers:

- A 2-ft thick low permeability soil layer from an on-post excavation;
- Burrow barrier of cobbles 1-ft thick from off post;
- Common fill layer 3-1/2 ft thick from on post; and
- Topsoil layer 6-in thick from off post.

The costs of this cap (\$23.30/SY) include excavation, hauling, grading and compaction of low-permeability and common borrow materials from on-post borrow areas (Technology Description Volume). The maintenance of this cap will include annual inspection and replacement of eroded materials at \$0.33/SY per year (Technology Description Volume).

Where an existing soil cover is in place, a modified clay/soil cap (\$22.80/SY) is used that is identical to the standard clay/soil cap except that the topsoil and 1-1/2 ft of the existing soil cover are stripped, stockpiled, and used in the clay/soil cap. The use of these materials eliminates the need to purchase topsoil off post and reduces the required common fill to 2 ft.

Soil Cover

A Soil Cover is used for potential UXO and agent presence areas that incorporates most of the features of the clay/soil cap. The differences are that the cap itself includes only the 3-1/2-ft-thick common fill and 6-inch-thick topsoil layers (\$9.14/SY).

Composite Cap

The Composite Cap for the Basin F Wastepile is of a design that generally conforms to EPA guidance under RCRA for landfill final cover systems. The new RCRA composite cap (\$36.04/SY) will consist of the following layers:

- a geosynthetic filter layer
- a low permeability soil layer 2-ft thick

- a 100 mil synthetic flexible membrane liner
- a drainage layer 1-ft thick of coarse material (sand)
- an additional geosynthetic filter layer
- a biota barrier 1-ft thick consisting of cobbles
- common fill 3-1/2-ft thick from an on-post excavation
- topsoil 1/2-ft thick provided from off-post.

Maintenance of the cap must be performed periodically to monitor for and prevent settlement, erosion, and deep-rooted vegetation or burrowing animals (\$1.23 SY\YR). The costs for all of these items are taken from the Technology Description Volume.

On-Post Landfill

The On-post Landfill costs were estimated based in part on the costs contained in the Task 27 Hazardous Waste Land Disposal Facility Assessment (EBASCO, 1988) hereafter referred to as the Task 27 Landfill Report). The Task 27 Landfill Report contains a detail design of the waste cell including the liner and the cover. The dimensions for the 1.5 million CY landfill cell in the Task 27 Report were found to be in error. Therefore, some modifications to the Task 27 Report were conducted to arrive at the waste cell dimensions for the on-post landfill.

The landfill will contain four waste cells each with a 1.5 million CY capacity. The cells have a length of 1,140 ft with a 4H:1V cover side slope and a 3H:1V liner side slope. The total depth of the waste cell is 35 ft. The liner bottom is square with a 1035 ft side dimension. The cover top is square with a 1000 ft side dimension. The cover of the hazardous waste landfill consists of: geosynthetic filter, geonet for vapor collection 2 ft low permeability soil layer, HDPE, 1 ft of sand, geosynthetic filter, 1 ft of biota barrier, geosynthetic filter, 3.5 ft of general fill, and 0.5 ft of topsoil. With a total cost for the cover of \$5,700,000. The hazardous waste landfill liner contains: geosynthetic filter, 1 ft of sand, geosynthetic filter, geonet, HDPE 3 ft thick low permeability soil layer, 1 ft of sand, HDPE and 3 ft thick low permeability soil layer. The total cost of the hazardous waste landfill liner is \$5,100,000. The lump sum facility construction costs for a four cell facility is \$14,000,000. The cell construction costs, including liner and cover, are \$10,800,000 per cell. The total construction costs for the four 1.5 million CY cell landfill is

\$57,000,000. The costs for construction of the hazardous waste landfill facility include:

Facility Construction	\$14,000,000
Cell Construction	4 cells
Liners	\$20,000,000
Covers	\$23,000,000
Total	\$57,000,000

The dimensions of the solid waste landfill cells are the same as those for the hazardous waste landfill cell. The solid waste landfill cover consists of: geosynthetic filter, geonet 2 ft low permeability soil layer, 1 ft of sand, geosynthetic 1 ft of biota barrier, 3.5 ft of general fill, and 0.5 ft of topsoil. The total cost for the solid waste landfill cover is \$5,600,000. The solid waste landfill liner contains: geosynthetic filter, 1 ft of sand, geosynthetic filter, HDPE and 3 ft of low permeability soil layer. The solid waste liner will cost \$2,700,000. The costs construction of the solid waste landfill facility include:

Facility Construction	\$14,000,000
Cell Construction	4 cells
Liners	\$11,000,000
Covers	\$22,000,000
Total	\$47,000,000

The operating costs for the hazardous and solid waste landfill facilities is \$4.07/BCY based on the costs for placing and compacting contaminated soils and for placing daily soil covers during operation. The landfill will require long-term operations and maintenance for the facility which includes post-closure monitoring and maintenance at a rate of \$0.13/BCY annual based on the total annual cost and a volume of 6.0 million BCY.

The costs of grubbing and clearing areas (\$0.17/SY) prior to excavation and of installing a 6 inch layer of topsoil (\$3.24/SY) are based on unit costs from means site work and landscape cost data (Means, 1993). A unit cost was developed to include the cost of placing and grading soils as fill prior to installing a cap to a design grade of between 1.5 and 3 percent. The cost of \$5.06/BCY accounts for the cost of excavating the fill soils, transporting the soils an average distance of 2.5

miles, and backfilling and grading the soils at the site. The unit cost for preparing a subgrade prior to installing a cap is based on compacting the ground surface with moderate compactive effort at a unit cost of \$0.06/SY from Means Heavy Equipment Guide (Means, 1991). Two unit costs were developed for screening sites to identify areas which contain agent. One unit cost accounts for screening soil samples in the field during excavation (\$4.89/CY), and the other cost includes the cost of drilling soil borings and screening the collected soil samples at a cost of \$0.10/SY.

B.3.4 Direct Treatment

A number of direct treatment process options are considered for the DAA. Each is described in detail below.

UXO Detonation

The capital costs for UXO detonation include the construction of an on-post rotary kiln incinerator for the incineration of the UXO casings and drained agent after the on-post demilitarization of the UXOs. The rotary kiln incinerator must be capable of accomplishing 5X decontamination which involves treating the demilitarized UXOs at a minimum of 1000°F for 15 minutes. The rotary kiln incinerator is assigned the same unit capital cost as developed for direct incineration. The capital cost is \$36.37/BCY. The operating cost for on-post incineration is the same as the operating cost for the rotary kiln. The operating cost is \$96.24/BCY plus the on-post detonation cost of \$120.56/BCY (D'Appolonia 1984) for a total of \$209.42/BCY.

U-UXO-DETONATION-HE

The on-post detonation of HE filled UXO involves the handling, packaging, transport, and detonation of the UXO by trained Explosive Ordnance Division (EOD) personnel. A three-person team will be used to perform this task. The UXO will be transported to an existing on-post site specifically designed for detonation of UXO. Detonation will take place at least once each working day. The operating costs are \$70.57/CY for UXO removal and \$46.75/CY for the handling, packaging, transportation, and detonation of the HE-filled UXO.

Soil Washing

Capital costs are based on a 20 ton per hour soil washing unit. The total capital cost is \$2,927,000 and includes all soil washing equipment plus an additional \$3,838,000 for the CERCLA Wastewater Treatment Facility. Costs are based on Biotrol's Applications Analysis Report (EPA 1991). Operating time for treatment of the soil volume is estimated using a throughput efficiency of 70 percent for the soil washing equipment.

Annual soil washing costs are based on Biotrol's Applications Analysis Report (EPA 1991), specifically the following:

- Soil washing unit operation labor @ \$13.25/BCY
- Surfactants and flocculants @ \$17.29/BCY
- Residuals @ \$0.03/BCY
- Laboratory analysis @ \$1.83/BCY
- Effluent water treatment @ 2.91/BCY

The total operating cost is estimated at \$35.31/BCY.

Agent Caustic Washing

The costs for caustic soil washing is broken down into both capital and operating costs. The capital costs are based on the total anticipated agent contaminated soil volume of 3,600 CY which represents 0.1 percent of the potential volume of all the medium groups anticipated to contain agent contaminated soils and using a 20 ton per hour caustic washing unit. The total capital cost is based upon a eight month rental of the required caustic washing equipment amortized over a 10 year period which is estimated to cost \$76.95/BCY and includes all caustic washing equipment. The operating costs for caustic washing are based on the following:

- Material handling/feeding @ \$0.31/BCY
- Soil washing unit operation labor @ \$13.71/BCY
- Surfactant and flocculants @ \$12.00/BCY
- Caustic (773 LB NaOH beads/CY soil) @ \$177.17/BCY
- Utilities @ \$3.83/BCY
- Maintenance and supplies @ \$1.46/BCY

- Facility modification, repair, and replacement @ \$2.09/BCY
- Laboratory analysis @ \$1.73/BCY

The total operating cost per cubic yard is estimated at \$212.30/BCY. The costs are based upon a 24 hour per day operation with the caustic washing being estimated to last approximately 8 months.

The costs for treatment of the caustic effluent by soil drying is broken into both capital and operating costs. The capital cost includes the construction and set up of the caustic effluent treatment system and is based on the anticipated total agent soil volume of 3,600 BCY which represents 0.1 percent of the potential volume of all the sites anticipated to contain agent contaminated soils and using the costs of a size 40 spray drying system obtained from Selch Process Systems (Selch, 1993). The total capital cost was obtained by multiplying the cost for a size 40 dryer by 40 percent to obtain a cost that represents a spray drying unit large enough to dry the total quantity of solution that will be generated by the caustic washing unit within approximately the same time frame as it is estimated the caustic washing system would take to wash the 3,600 BCY of soil (8 to 12 months) the estimated unit capital cost for the spray drying system is \$245.00/BCY. The operating costs for caustic effluent treatment are based upon the following:

- Material handling/feeding @ \$0.31/BCY
- Spray Drying unit operation labor @ \$8.31/BCY
- Utilities @ \$3.90/BCY
- Maintenance and supplies @ \$1.46/BCY
- Facilities modification, repair, and replacement @ \$2.09/BCY
- Laboratory analysis @ \$1.73/BCY

The total operating cost per cubic yard, based upon a 24 hour a day operation, is estimated at \$17.80/BCY which was also obtained from Selch Process Systems (Selch, 1993).

Direct Cement-Based Solidification

The capital cost of direct cement-based solidification is developed from costs reported in the

Hazcon Solidification Process Douglasville, PA, Applications Analysis Report (EPA, 1989). The treatment unit is transportable and consists of a pug mill mixer, and a cement batching plant capable of processing 46 BCY of soil in one eight-hour shift. The on stream factor for this equipment is 90 percent or approximately 260 days per year based on 5 days per week. The capital cost for soils handling, cement storage and handling, and materials mixing equipment is reported as \$180,000 in May, 1989, and escalated at 3 percent per year (ENR 1992) to yield a current capital cost of \$200,000. Assuming a five year service life before equipment replacement, the unit capital cost is developed as follows:

$$(\$200,000)(1 \text{ day}/46 \text{ BCY})(1 \text{ year}/260 \text{ days})(\text{replace}/5 \text{ years}) = \$3.35/\text{BCY}$$

The operating labor and utility costs for direct cement-based solidification are also taken from Hazcon Solidification Process Douglasville, PA, Applications Analysis Report (EPA, 1989), and are corrected for single shift operations. For handling purposes, it is assumed that the soil volume will expand by a factor of 1.15 after excavation. The transportable treatment unit will be located close to the excavation so that separate transportation costs are insignificant. Portland cement will be mixed with excavated soil at a ratio of 0.2 tons of cement per ton of soil. This formulation has proven effective in the screening tests conducted on RMA soils by the U.S. Army Corps of Engineers Waterways Experiment Station (WES 1992). At \$65 per ton for bulk delivered cement, the operating costs for direct solidification are as follows:

- Labor salaries and daily expenses @ \$23.46/ton
- Utilities @ \$1.11/ton
- Analytical @ \$5.65/ton
- Maintenance @ \$0.68/ton
- Consumable supplies @ \$2.25/ton
- Cement binder @ \$14.30/ton
- Water Truck & driver @ \$2.00/ton

The total operating cost is \$49.45/ton or \$70.10/BCY based on a density of 1.42 tons/BCY, and single shift operation with a five-day work week. As a result of the cement addition, the volume

of treated soil will expand by a factor of 1.20.

Thermal Desorption

The capital cost for thermal desorption is based on the economics developed in the Draft Concept Engineering Study Report for Thermal Desorption System for Rocky Mountain Arsenal Soils (Weston 1992a). The base case economics assume a soil moisture content of 20 percent. Weston's conceptual design postulates the construction of a large central thermal desorption facility using a common soil processing building and parallel rotary dryers. The dryers are connected to parallel off gas treatment trains consisting of a secondary combustion chamber followed by a quench tower and an acid-gas scrubber. For transportation detailing, the location is assumed to be near the intersection of 7th Avenue and D Street.

Weston's central facility is sized to process 3,100,000 BCY of contaminated soil in a 10 year time frame. Correcting from Weston's soil density of 100 lbs/CF to a more typical value of 105 lb/CF for RMA soils, the volume processed in 10 years becomes 3,000,000 BCY. On stream time for the equipment was set by Weston at 65 percent or approximately 237 days per year. At an average soil moisture content of 20 percent (saturated soil), the two rotary dryers are capable of processing about 1,776 tons or 1,251 BCY of saturated soil per day based on a density of 1.42 tons/BCY. Without engineering costs, field indirect costs, and contingencies, the current capital, start-up, and demonstration cost of the Weston design is \$42,508,000. The unit capital cost is developed as follows:

$$(\$42,508,000)/(3,000,000 \text{ BCY}) = \$14.17/\text{BCY}$$

The operating costs for thermal desorption are taken from Weston's Concept Engineering Study Report for Thermal Desorption (Weston 1992a):

- Operating and maintenance labor @ \$5,585,000/year
- Utilities @ \$12,750,000/year
- Chemicals @ \$1,120,000/year
- Analytical expenses @ \$580,000/year
- Other expenses @ \$1,250,000/year

- Maintenance materials @ \$550,000/year

The total operating cost is \$21,835,000/year and the unit operating cost is developed as follows:

$$(\$21,835,000/\text{year})(1 \text{ year}/237 \text{ days})(1 \text{ day}/1,251 \text{ BCY}) = \$73.64/\text{BCY}$$

For a soil moisture content of 10 percent (dry soil), the processing capacity of the rotary dryers in Weston's central facility is increased substantially over the base design case of 20 percent moisture. If the equipment vapor velocities are held constant, Weston's central facility is capable of processing about 2,784 tons or 1,961 BCY of dry soil per day at a density of 1.42 tons/BCY or 3,000,000 BCY of contaminated soil in 7 years. Since the total volume of soil remains unchanged, the unit capital cost is still the same \$14.17/BCY as the 20 percent moisture case.

Except for chemical consumption and brine disposal costs, other yearly operating cost remain the same at a soil moisture level of 10 percent. A small correction is required for the fuel consumed in the 10 percent moisture case:

- Operating and maintenance labor @ \$5,585,000/year
- Utilities @ \$13,114,000/year = $102.67/99.82 \times \$12,750,000$
- Chemicals @ \$1,755,000/year = $2050/1308 \times \$1,120,000$
- Analytical expenses @ \$580,000/year
- Other expenses @ \$1,250,000/year
- Maintenance materials @ \$550,000/year

The total operating cost is \$22,834,000/year and the unit operating cost is developed as follows:

$$(\$22,834,000/\text{year})(1 \text{ year}/237 \text{ days})(1 \text{ day}/1,961 \text{ BCY}) = \$49.13/\text{BCY}$$

For a soil moisture content of 40 percent (wet soil), the processing capacity of the rotary dryers in Weston's central facility is substantially decreased over the base design case of 20 percent moisture. If the equipment velocities are held constant, Weston's central facility is capable of processing about 984 tons or 693 BCY of wet soil per day, based on a density of 1.42 tons per BCY or 3,000,000 BCY of contaminated soil in about 18 years. Since the volume of soil to be treated remains unchanged, the unit capital cost is still the same \$14.17/BCY for the 40 percent

moisture case.

Except for chemical consumption and brine disposal costs, other yearly operating cost remain the same at a soil moisture level of 40 percent. A small correction is required for the fuel consumed in the 40 percent case:

- Operating and maintenance labor @ \$5,585,000/year
- Utilities @ \$12,511,000/year = $97.95/99.82 \times \$12,750,000$
- Chemicals @ \$621,000/year = $725/1308 \times \$1,120,000$
- Analytical expenses @ \$580,000/year
- Other expenses @ \$1,250,000/year
- Maintenance materials @ \$550,000/year

The total operating cost is \$21,097,000/year and the unit operating cost is developed as follows:

$$(\$21,097,000/\text{year})(1 \text{ year}/237 \text{ days})(1 \text{ day}/693 \text{ BCY}) = \$128.48/\text{BCY}$$

Incineration

The capital cost for incineration is adapted from the economics developed in the Draft Concept Engineering Study Report for Thermal Desorption System for Rocky Mountain Arsenal Soils (Weston 1992a). As with thermal desorption, the design base case assumes a soil moisture content of 20 percent; however, the volume of contaminated soils to be treated is only 600,000 BCY rather than the 3,100,000 BCY used in the Weston design. For calculating transportation costs, the facility is assumed to be located at the intersection of 7th Avenue and D Street.

The rotary kiln incinerator discharges soil at 1400 °F, whereas the rotary dryer discharges soil at 575 °F. If equipment velocities are held constant, the rotary kiln incinerator is almost 50 percent larger in diameter than the rotary dryer, but the rest of the soil handling and off gas treatment facilities are identical to the Weston thermal desorption facility. The larger kilns add an estimated \$1,140,000 to Weston's base case capital cost of \$42,508,000 to yield a cost of \$43,648,000 for a two-train facility. Because a single train incineration facility is more appropriate for a remediation volume of 600,000 BCY, half of the adjusted capital cost (\$21,824,00) is used as the basis for a single-train design. For a soil moisture content of 20

percent (saturated soil), a single-train central incineration facility, using the same soil pretreatment and off-gas treatment equipment as Weston's concept thermal desorber, will be capable of processing contaminated soil at a rate of 672 tons or 473 BCY per day at a density of 1.42 tons/BCY or 600,000 BCY of soil in a 5.3 year time frame. Without engineering costs, field indirect costs, and contingencies, the unit capital cost is developed as follows:

$$(\$21,824,000)/(600,000 \text{ BCY}) = \$36.37/\text{BCY}$$

The operating costs for incineration are based on appropriate adjustments to the utility and chemical costs for thermal desorption in Weston's Concept Engineering Study Report for Thermal Desorption (Weston 1992):

- Operating and maintenance labor @ \$2,793,000/year = \$5,585,000/2
- Utilities @ \$6,120,000/year = 67.6/70.5 x \$12,750,000/2
- Chemicals @ \$424,000/year = 989/1308 x \$1,120,000/2
- Analytical expenses @ \$290,000/year = \$580,000/2
- Other expenses @ \$625,000/year = \$1,250,000/2
- Maintenance materials @ \$550,000/year = 2 x \$550,000/2

The total operating cost is \$10,794,000/year and the unit operating cost is developed as follows:

$$(\$10,794,000/\text{year})(1 \text{ year}/237 \text{ days})(1 \text{ day}/473 \text{ BCY}) = \$96.24/\text{BCY}$$

B.3.5 In Situ Treatment

A number of in situ treatment process options are considered for the DAA. Each is described in the following paragraphs.

Agricultural Practices

The cost estimate for land farming/agricultural practices consist of the operating and maintenance costs of the agricultural tilling and revegetation. The agricultural practice costs consist of ripping the soil to a depth of 6 to 8 inches to break up surface hard pan (\$0.01/SY). Plowing the soil

to a depth of 10 to 12 inches to facilitate further mixing (\$0.013/SY) and disking the soil with 3 passes to thoroughly mix the soil (\$0.031/SY) and added fertilizer (\$0.013/SY). The soil is then harrowed (\$0.005/SY) in preparation of revegetation.

Revegetation consists of drilling (\$0.008/SY) a native seed mixture at \$0.023/SY for a typical native seed mixture. Seed cost will be lower in areas seeded with species designed to discourage wildlife use and higher in areas seeded with exotic native species to improve wildlife areas. A surface mulch is then added (\$0.075/SY) to minimize wind dispersion and erosion while the seed takes hold. The applied is crimped mulch (\$0.006/SY) to secure it to the soil.

In Situ Biological Treatment (Aerobic Biodegradation)

This cost estimate for biodegradation consists of direct capital costs including equipment purchases and operation maintenance costs consisting of operation of the in situ bioremediation system. The primary direct capital cost is purchase of the in situ bioremediation equipment (\$1,440,000). Operations costs consist of operation of the in situ bioremediation equipment, including moving the equipment from one site to another, adding appropriate nutrients and agitating the sediments as necessary (\$34.70/BCY).

Soil Vapor Extraction

Unit costs are based on site specific features at the South Plants Tank Farm Area which include air permeability, well radius of influence, etc. Capital costs are based on the Technical Evaluation LNAPL Plume Soil Vapor Extraction Process Field Demonstration Treatability Study (Shell 1991a). Operating life of the system estimated at 10 years for greater than 90 percent removal. The capital costs are as follows:

Blowers	\$126,000
Manifold line material	\$450,000
Well installation	\$210,000
Trenching and Bedding	\$145,000
Catalytic Oxidizer	\$60,000
Installation of equipment	<u>\$62,000</u>
	\$1,053,000

Annual operating costs are based on the exceedance soil volume, initial concentrations of 1,000 PPM and catalytic oxidation treatment. Costs are based on the following:

Operating labor	\$92,000
Utilities	\$116,600
Replacement Costs	\$5,000
Confirmation samples	<u>\$3,300</u>
	\$217,000/yr

The annual unit cost on a square yardage basis is \$2.97 SY/yr. Operating costs will be incurred in years 1 through 10 to achieve approximately 90 percent removal.

RF/Microwave Heating

The capital cost for RF/Microwave Heating is \$7,066,000 based on the treatment of Basin F as developed in the Draft In Situ Radio Frequency Heating/Vapor Extraction Concept Engineering Report (Weston 1992b). There are four different operating costs for RF heating based on depth of contamination and moisture content of the soil. The operating costs have been classified as follows:

Deep - \$198.66/BCY for contamination detected down to depths of 10 feet in soil with a moisture content of approximately 10 percent;

Deep/Saturated - \$229.41/BCY for contamination detected down to depths of 10 feet in soil with a moisture content of approximately 20 percent;

Shallow - \$217.67/BCY for contamination detected down to depths of 5 feet in soil with a moisture content of approximately 10 percent; and

Shallow/Saturated - \$251.59/BCY for contamination detected down to depths of 5 feet in soil with a moisture content of approximately 20 percent.

The deep and shallow operating costs were developed based on calculations presented in Weston (1992b). These same calculations were then modified to account for a slower processing rate due to the increased moisture content (i.e., 20 percent) of some of the subgroups.

Surface Soil Heating

The capital cost for Surface Soil Heating is \$951,200 per unit which was based on the capital cost developed in the Enhanced Surface Soil Vacuum Extraction Process Pilot Scale Field Demonstration Report (Shell 1991b). The capital cost was modified due to the incorporation of contingency factors which are already included in the cost estimate. The operating costs are calculated on a per square yard basis. The operating cost developed by Shell (1991b) was reduced to \$27.30/SY due to the incorporation of costs for revegetation, capacity charge, and general facility which are also already included in the cost estimate as individual cost items or included as part of an existing cost item.

In Situ Vitrification

The unit costs for vitrification are based on the In Situ Vitrification Design Analysis and Cost Estimate for the M-1 Settling Basins at Rocky Mountain Arsenal (Woodward-Clyde Consultants 1992). The capital costs include the following:

• Backfill and grade	\$131,858
• Safety fence	30,342
• Stairs	4,024
• Tank and foundation	18,561
• Mechanical Work	113,019
• Electrical Work	40,563
• Mobilization/Demobilization	421,493
• Removal of Support Items	31,722
Total	\$791,582

The operating costs are converted to a BCY basis by prorating the total operating cost over the treatability study volume of 10,200 BCY. The operating costs are as follows:

• Sampling and Analysis	\$ 966,183
• Site Administration	\$ 639,016
• Stack Sampling	\$ 257,187
• Vitrification	\$6,912,135
Total	\$8,774,521 or \$860.25/BCY

In Situ Cement-Based Solidification

There are no capital costs for in situ cement-based solidification because the mixing/boring unit is proprietary equipment and is generally leased from a supplier or operator such as Millgard Environmental Corporation or Geo-Con, Inc. The transportable treatment unit is based on a track-mounted boring/mixing unit and a cement batching plant capable of processing about 600 BCY of soil per day. For a long-term operation (one year in the field) Millgard quotes a unit cost of \$25.00/BCY for operation of the MecTool processing and support equipment inclusive of operating labor, utilities, and maintenance.

Portland cement will be injected into the soil at a ratio of 0.2 tons of cement per ton of soil. This formulation has proven effective in the screening tests conducted on RMA soils by the U.S. Army Corps of Engineers Waterways Experiment Station (WES 1992). At \$65 per ton for bulk delivered cement, the binder cost of in situ solidification is \$23.03/BCY of soil, inclusive of a 25 percent excess for overlap and loss. Consumable safety supplies and analytical costs are taken from the Geo-Con In Situ Stabilization/Solidification Process Applications Analysis Report for Hialeah, FL (EPA 1990).

- Equipment lease includes labor, expenses, and utilities @ \$25.00/BCY
- Water trucks (2) & drivers @ \$0.96/BCY
- Analytical @ \$2.00/BCY
- Consumable supplies @ \$9.00/BCY
- Cement binder and water @ \$23.17/BCY

The total unit cost of in situ cement-based solidification is \$60.38/BCY. The volume expansion factor for the soil/cement mixture is assumed to be 1.20.

In Situ Soil Flushing

Capital costs are based on the soil volume requiring treatment at the Basin A Medium Group which includes 1,100,000 BCY over an area of 640,000 SY. The soil flushing distribution system would include earthen barriers, piping, sprinkler flushing distribution system, and an expansion of the Basin A Neck groundwater collection and treatment system. Costs are based on Basin A Neck groundwater extraction and treatment expansion estimates, Water DAA (Ebasco 1993).

- Soil flushing sprinkler distribution system @ \$220,000
- Basin A Neck extraction expansion and treatment system based on Water DAA Alternative AC-3 and treatment alternative AT-2 @ 7,890,000

The total capital cost is estimated at \$8,100,000

The in situ soil flushing operating costs were calculated based on 3 pore volumes of surfactant flush and 1 pore volume of fresh water flush, and a flushing system rate of 70 gallons per minute, requiring a flushing life of 18 years with continued groundwater treatment through year 10. Annual costs include surfactants, utilities, maintenance and supplies, soil and groundwater monitoring, and ground water treatment costs. These costs include:

- Surfactant usage based on 3 pore volumes @ \$66.62/BCY
- Maintenance and supplies @ \$0.02/BCY
- Treatment Costs @ \$5.82/BCY
- Labor (flushing) @ \$0.47/BCY

The annual costs are estimated at \$73.30/BCY.

B4.0 INDIRECT COSTS

Indirect costs are applied to the sum of the three main cost groups which include direct capital costs, direct O&M costs, and direct O&M long-term activities costs. To better evaluate and estimate the indirect costs, the capital and O&M operating costs were subdivided between direct costs and direct subcontract costs. The indirect costs include:

- Mobilization/Demobilization
- Indirects, Overhead, and Profit; or Contractor Markup
- Engineering Design
- Resident Engineering
- Contingency

The indirect costs vary due to the four consideration factors: medium group contamination; technologies selected; size of the project; and the duration. Based on the characteristics of each alternative as it is applied to the medium group, these factors assist in the development of indirect percentages as explained below. These indirect percentages are then applied to the direct costs to determine an overall total cost.

In order to provide a uniform basis of estimate, a cost markup matrix was developed based on the consideration factors to determine indirect costs percentages for direct capital and O&M costs. This matrix is presented as Table B.0-1. Percentages for these estimates have been modified to distinguish relative cost differences between on-post and off-post activities and subcontracts. In some instances these factors were individually adjusted to be more representative of the individual alternative's complexity. The following sections explain the indirect markup factors and the application rationale.

B.4.1 MOBILIZATION/DEMOBILIZATION

Mobilization activities include construction/setup of contractor's support facilities, mobilization of heavy equipment, and relocation of management/supervisory personnel. Demobilization consists of decontamination and removal of contractor's equipment and facilities from the site. Costs for these activities are applied as a percentage of direct cost. These percentages applied vary from 2-7 percent as shown in markup matrix. For subcontract costs these percentages have been adjusted on a case-by-case basis, based on vendor quotes, and past knowledge and experience with similar projects.

B.4.2 INDIRECTS, OVERHEAD, AND PROFIT; OR CONTRACTOR MARKUP

Indirect Costs are calculated as a percentage of the sum of direct and mobilization/demobilization costs. Indirect costs cover the cost of on-site management, administrative, technical, health and safety, and supervisory staff, utilities for site support facilities (excluding production facilities), engineering tests, QA/QC program, preparation of work plans, submittals and as-built drawings, bonding costs, support facilities, and vehicle maintenance and operation. The range of percentages applied vary between 34-44 percent.

Subcontract cost for Indirects, Overhead, and Profit is identified as a Contractor Markup in the estimates and includes on-site management, administrative, technical, health and safety, supervisory staff, and subcontract profit. The Contractor's Markup ranged from 6-12 percent.

B.4.3 ENGINEERING DESIGN

The engineering design costs are estimated as a percentage of the sum of direct costs; mobilization/demobilization costs; and indirects, overhead, and profits. In general, engineering percentages were developed based on past experience of engineering costs on similar projects. These percentages are dependent upon the degree of complexity associated with the particular alternative and the complexity of the treatment technology selected. Standard percentages ranging between 3-6 percent are applied to the estimates, however, certain alternatives required adjustments to reflect extenuating circumstances in the required design effort and were adjusted accordingly.

B.4.4 RESIDENT ENGINEERING

The resident engineering costs are estimated as a percentage of the sum of direct costs; mobilization/demobilization costs; and indirects, overhead, and profits. The alternative size, estimated project duration, and the remedial technology selected would determine the level of effort required for inspection and field engineering support to assure conformance and verification with the approved remedial design. Standard percentages ranging between 1-3 percent are applied to the estimates.

B.4.5 CONTINGENCY

Contingency is applied as a percentage of the sum of direct costs; mobilization/demobilization costs; indirects, overhead, and profits; and design and resident engineering costs. Contingency covers the specific provisions for unforeseeable elements of costs within the defined project scope; particularly important where previous experience relating estimates and actual costs has shown that unforeseeable events which will increase costs are likely to occur. To effectively compare the design alternatives contained in this document, contingency has been applied to each alternative estimate based on the complexity of the treatment technology, unforeseen and unpredictable conditions, and/or uncertainties within the scope of this project. Other considerations which may affect the selection of contingency are levels of contamination; environmental media and climatic conditions; scheduling; changes in federal, state, or local

regulations, and other issues unique to the project such as waste management permits and regulatory reviews.

Separate contingencies were developed for capital cost, operation and maintenance cost, and long-term activities which are illustrated in the markup matrix. A contingency range for this level of detail is typically 20-50 percent, which was for these estimates. The contingency to be provided for the current estimates was developed based on four cost parameters considered for each cost type, including levels of contamination, the complexity of the treatment technology, the size of the project, and the estimated duration of the activity. The amount of contingency applied to the estimates in this document ranged between 25-40 percent based on these consideration factors and on past experience and knowledge with similar remedial projects.

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TABLE B.0-1
INDIRECT COST FACTORS MATRIX

13-Jul-93

CAPITAL COST

CONSIDERATION FACTORS	LEVEL	EXAMPLES	MOB/ DEMOB	INDIRECTS O&P	DESIGN ENGR	RESIDENT ENGR	CNTNGCY
CONTAMINATION	Low	Level D or no protection Up to 10% Level C No Level A or B	2.00%	34.00%		1.00%	25.00%
	Medium	From 10% to 25% Level C No Level A or B	4.50%	39.00%		2.00%	30.00%
	High	26% or greater Level C Level A or B	7.00%	44.00%		3.00%	40.00%
TECHNOLOGY	Low	Excavation, backfill, transportation, normal civil/structural construction Vapor Extraction, Landfill	2.00%	39.00%	3.00%	1.00%	25.00%
	Medium	Demolition, Proven Decon Methods, Pump & & Treat Facilities, Mech & Elect Const, UXO D&D Solidification	4.50%	39.00%	4.50%	2.00%	30.00%
	High	Incineration, Thermal Desorption In-Situ Vitrification, Unproven Decon Methods	7.00%	39.00%	6.50%	3.00%	40.00%
JOB SIZE	Small	Less than 20 Craft personnel	4.50%	44.00%		2.00%	30.00%
	Medium	20 to 60 Craft personnel	4.50%	39.00%		2.00%	30.00%
	Large	More than 60 Craft personnel	4.50%	34.00%		2.00%	30.00%
DURATION	Short	< 3 Years	4.50%	39.00%		1.00%	25.00%
	Medium	3 to 7 Years	4.50%	39.00%		2.00%	30.00%
	Long	> 7 Years	4.50%	39.00%		3.00%	40.00%

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TABLE B.0-1
INDIRECT COST FACTORS MATRIX

13-Jul-93

O&M COST

CONSIDERATION FACTORS	LEVEL	EXAMPLES	MOB/ DEMOB	INDIRECTS O&P	DESIGN ENGR	RESIDENT ENGR	CONTNGCY
CONTAMINATION	Low	Level D or no protection Up to 10% Level C No Level A or B	2.00%	34.00%		1.00%	25.00%
	Medium	From 10% to 25% Level C No Level A or B	4.50%	39.00%		2.00%	30.00%
	High	26% or greater Level C Level A or B	7.00%	44.00%		3.00%	40.00%
TECHNOLOGY	Low	Excavation, backfill, transportation, normal civil/structural construction Vapor Extraction, Landfill	2.00%	39.00%	0.00%	1.00%	25.00%
	Medium	Demolition, Proven Decon Methods, Pump & & Treat Facilities, Mech & Elect Const, UXO D&D Solidification	4.50%	39.00%	1.00%	2.00%	30.00%
	High	Incineration, Thermal Desorption In-Situ Vitrification, Unproven Decon Methods	7.00%	39.00%	2.00%	3.00%	40.00%
JOB SIZE	Small	Less than 20 Craft personnel	4.50%	44.00%		2.00%	30.00%
	Medium	20 to 60 Craft personnel	4.50%	39.00%		2.00%	30.00%
	Large	More than 60 Craft personnel	4.50%	34.00%		2.00%	30.00%
DURATION	Short	< 3 Years	4.50%	39.00%		1.00%	25.00%
	Medium	3 to 7 Years	4.50%	39.00%		2.00%	30.00%
	Long	> 7 Years	4.50%	39.00%		3.00%	40.00%

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TABLE B.0-1
INDIRECT COST FACTORS MATRIX

13-Jul-93

LONG TERM COST				
CONSIDERATION FACTORS	LEVEL	EXAMPLES	INDIRECTS O&P	CNTNGNCY
CONTAMINATION	Low	Level D or no protection Up to 10% Level C No Level A or B	34.00%	25.00%
	Medium	From 10% to 25% Level C No Level A or B	39.00%	30.00%
	High	26% or greater Level C Level A or B	44.00%	40.00%
TECHNOLOGY	Low	Fencing, Cap Repair, Erosion Control Soil Monitoring, Leachate Collection	39.00%	25.00%
	Medium	None	39.00%	30.00%
	High	None	39.00%	40.00%
JOB SIZE	Small	Less than 20 Craft personnel	44.00%	30.00%
	Medium	20 to 60 Craft personnel	39.00%	30.00%
	Large	More than 60 Craft personnel	34.00%	30.00%
DURATION	Short	< 3 Years	39.00%	25.00%
	Medium	3 to 7 Years	39.00%	30.00%
	Long	> 7 Years	39.00%	40.00%

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Table B1.1-U1 Cost Estimate - Munitions Testing Medium Group
Alternative U1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
U - No Action	LS	1	--	0.00	/SY	270,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE														
LS														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
0														

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Table B1.1-U1 Cost Estimate - Munitions Testing Medium Group
Alternative U1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - No Action	LS	1	--	0.00	/SY	270,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (T)													0	0
COST CODE														
J = 0.033 * (T)														
K = 0.380 * (T+J)														
L = 0.005 * (T+J+K)														
M = 0.013 * (T+J+K+L)														
N = 0.283 * (T+J+K+L+M)														
Subtotal (O = J+K+L+M+N)													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
U - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
Subtotal (P)													8,000	88,000
COST CODE														
Q = 0.390 * (P)														
R = 0.283 * (P+Q)														
Subtotal (S)													2,000	36,000
TOTAL O&M COSTS (T = I+O+P+S)													11,000	172,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
M-U1 WOI													324,000	172,000
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Table B1.1-U2 Cost Estimate - Munitions Testing Medium Group
Alternative U2: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
U - No Action	LS	1	--	0.00	/SY	270,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)														
Subtotal (G =B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (H)														
Subtotal (I)														
Subtotal (J)														
Subtotal (K)														
Subtotal (L)														
Subtotal (M)														
Subtotal (N)														
Subtotal (O)														
Subtotal (P)														
Subtotal (Q)														
Subtotal (R)														
Subtotal (S)														
Subtotal (T)														
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Subtotal (BQ)														
Subtotal (BR)														
Subtotal (BS)														
Subtotal (BT)														
Subtotal (BU)														
Subtotal (BV)														
Subtotal (BW)														
Subtotal (BX)														
Subtotal (BY)														
Subtotal (BZ)														
Subtotal (CA)														
Subtotal (CB)														

Table B1.1-U2 Cost Estimate - Munitions Testing Medium Group
Alternative U2: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance In Surface Soil by Geophysics	LS	1	-	0.24	/SY	270,000	SY	1.000	1.000	1.000			74,000	74,000
U - Excavation of Borrow Material	LS	1	-	1.89	/BCY	2,600	BCY	1.000	1.000	1.000			6,000	6,000
U - Transportation of Borrow Material to Bedfill Area	LS	1	-	0.86	/BCY-MILE	2,600	BCY	1.000	1.500	1.000			4,000	4,000
U - Backfill with Borrow Material	LS	1	-	1.72	/BCY	2,600	BCY	1.000	1.000	1.000			5,000	5,000
U - Soil Cover for Potential UXO Areas	LS	1	-	9.36	/SY	270,000	SY	1.000	1.000	1.000			2,984,000	2,984,000
U - Revegetation of Disturbed Areas	LS	1	-	0.18	/SY	270,000	SY	1.000	1.000	1.100	Disturbance		61,000	61,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													3,053,000	3,053,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
U - Site Reviews	A	2	30	0.32	/SY-YR	270,000	SY	1.000	1.000	1.000			98,000	137,000
U - Soil Cover for Potential UXO Areas	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000			6,000	1,236,000
Subtotal (O)													2,824,000	1,308,000
TOTAL O&M COSTS (I + O) = P														
Subtotal (P)													2,824,000	2,824,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects: Overhead & Profit													1,195,000	1,195,000
Contingency													1,257,000	1,257,000
Subtotal (S)													2,452,000	2,452,000
TOTAL O&M COSTS (I + O + P + S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (T)													11,347,000	6,724,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H + T)														
Subtotal (U)													11,300,000	8,720,000

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Table B1.1-U3a Cost Estimate - Munitions Testing Medium Group
Alternative U3a: Detonation (On-Post Detonation)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT CAPITAL COSTS															
U - On-Post Solid Waste Landfill, Construction and Operation (Debris and Isolate	LS	2	--	4.32	/BCY	90,000	BCY	1.000	1.000	1.000		444,000	444,000	423,000	
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	4	--	3.70	/BCY	90,000	BCY	1.000	1.000	1.000		360,000	360,000	328,000	
Subtotal (A)												824,000	751,000		
INDIRECT CAPITAL COSTS															
Mod/Demob	3.3%	COST CODE: LLSS													
Indirects, Overhead & Profit	39.0%	B = 0.033 * (A)													
Engineering Design	3.0%	C = 0.390 * (A+B)													
Resident Engineering	1.3%	D = 0.030 * (A+B+C)													
Contingency	26.3%	E = 0.013 * (A+B+C)													
F = 0.263 * (A+B+C+D+E)													324,000	295,000	
Subtotal (G = B+C+D+E+F)												732,000	687,000		
DIRECT SUBCONTRACT CAPITAL COSTS															
Subtotal (A1)												0	0		
INDIRECT SUBCONTRACT CAPITAL COSTS															
Mod/Demob	0.0%	COST CODE: E													
Contractor Markup	0.0%	B1 = 0.000 * (A1)													
Engineering Design	0.0%	C1 = 0.000 * (A1+B1)													
Resident Engineering	0.0%	D1 = 0.000 * (A1+B1+C1)													
Contingency	30.0%	E1 = 0.000 * (A1+B1+C1)													
F1 = 0.300 * (A1+B1+C1+D1+E1)													0	0	
Subtotal (G1 = B1+C1+D1+E1+F1)												0	0		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												1,556,000	1,418,000		

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Table B1.1-U3a Cost Estimate - Munitions Testing Medium Group
Alternative U3a: Detonation (On-Post Detonation)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance by Geophysics	LS	3	--	0.85	/SY	270,000	SY	1.000	1.000	1.000		262,000		226,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	450	BCY	1.000	1.000	1.000		36,000		33,000
U - Excavation of Debris from Surface Soil	LS	4	--	3.91	/BCY	90,000	BCY	1.000	1.000	1.300	Productivity	522,000		451,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	4	--	0.71	/BCY-MILE	90,000	BCY	1.000	3.000	1.300	Productivity	284,000		246,000
U - On-Post Solid Waste Landfill	LS	4	--	4.07	/BCY	90,000	BCY	1.000	1.000	1.000		418,000		361,000
U - Installation of 6 Inches of Topsoil	LS	4	--	3.24	/SY	270,000	SY	1.000	1.000	1.000		998,000		862,000
U - Revegetation of Disturbed Areas	LS	4	--	0.18	/SY	270,000	SY	1.000	1.000	1.100	Disturbance	61,000		53,000
Subtotal (I)													2,582,000	2,243,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	4.5%	COST CODE: MMMS												
Indirects, Overhead & Profit	39.0%	$J = 0.045 * (I)$												
Engineering Design	1.5%	$K = 0.380 * (I+J)$												
Resident Engineering	1.8%	$L = 0.015 * (I+J+K)$												
Contingency	28.8%	$M = 0.018 * (I+J+K)$												
		$N = 0.288 * (I+J+K+L+M)$												
Subtotal (O) = J+K+L+M+N													2,404,000	2,089,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
U - On-Post Detonation of HE Filled UXO	A	3	4	46.75	/BCY	450	BCY	1.000	1.000	1.000		24,000		21,000
Subtotal (H)													24,000	21,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	0.0%	COST CODE: E												
Contractor Markup	0.0%	$J1 = 0.000 * (H)$												
Engineering Design	0.0%	$K1 = 0.000 * (H+J1)$												
Resident Engineering	0.0%	$L1 = 0.000 * (H+J1+K1)$												
Contingency	30.0%	$M1 = 0.000 * (H+J1+K1)$												
		$N1 = 0.300 * (H+J1+K1+L1+M1)$												
Subtotal (O1) = J1+K1+L1+M1+N1													7,000	6,000
TOTAL O&M COSTS (OPERATIONS) (OO) = I+O+H+O1													5,017,000	4,359,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	4	30	0.13	90,000	BCY	1.000	1.000	1.000		13,000	360,000	177,000
Subtotal (P)											13,000	360,000	177,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit											5,000	141,000	68,000
Contingency											6,000	150,000	74,000
Subtotal (S = Q+R)											11,000	291,000	143,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											24,000	651,000	320,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													
												7,220,000	6,100,000

M-U3.WQ1
SOILS DAA

Table B1.1-U4a Cost Estimate - Munitions Testing Medium Group
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
U - On-Post Solid Waste Landfill	LS	1	--	4.32	/BCY	90,000	BCY	1.000	1.000	1.000		444,000	444,000	444,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	2	--	3.70	/BCY	90,000	BCY	1.000	1.000	1.000		360,000	360,000	360,000
Subtotal (A)													804,000	804,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)													27,000	27,000
Subtotal (C)													332,000	332,000
Subtotal (D)													35,000	35,000
Subtotal (E)													15,000	15,000
Subtotal (F)													324,000	324,000
Subtotal (G)													732,000	732,000
DIRECT SUBCONTRACT CAPITAL COSTS														
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob														
Contractor Markup														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B1)													0	0
Subtotal (C1)													0	0
Subtotal (D1)													0	0
Subtotal (E1)													0	0
Subtotal (F1)													0	0
Subtotal (G1)													0	0
TOTAL CAPITAL COSTS (H = A+G; A1+G1)													1,556,000	1,556,000

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Table B1.1-U4a Cost Estimate - Munitions Testing Medium Group
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	270,000	SY	1.000	1.000	1.000		282,000	249,000	
U - Removal of Soil with UXO	LS	2	--	70.57	/BCY	450	BCY	1.000	1.000	1.000		36,000	36,000	
U - Excavation of Debris from Surface Soil	LS	2	--	3.91	/BCY	90,000	BCY	1.000	1.000	1.300	Productivity	522,000	487,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	2	--	0.71	/BCY-MILE	90,000	BCY	1.000	3.000	1.300	Productivity	284,000	271,000	
U - On-Post Solid Waste Landfill	LS	2	--	4.07	/BCY	90,000	BCY	1.000	1.000	1.000		418,000	398,000	
U - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	270,000	SY	1.000	1.000	1.000		998,000	961,000	
U - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	270,000	SY	1.000	1.000	1.100	Disturbance	61,000	58,000	
Subtotal (I)												2,582,000	2,459,000	
INDIRECT O&M COSTS (OPERATIONS)														
COST CODE: MMMS														
Mob/Demob	4.5%	J = 0.045 * (I)												
Indirects, Overhead & Profit	38.0%	K = 0.380 * (I+J)												
Engineering Design	1.5%	L = 0.015 * (I+J+K)												
Resident Engineering	1.8%	M = 0.018 * (I+J+K)												
Contingency	28.6%	N = 0.286 * (I+J+K+L+M)												
Subtotal (O = J+K+L+M+N)												2,404,000	2,289,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
U - Packaging and Transportation of HE Filled UXO to Army Off-Post Facility	LS	2	--	59.50	/BCY	450	BCY	1.000	1.000	1.000		31,000	29,000	
Subtotal (I1)												31,000	29,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
COST CODE: E														
Mob/Demob	0.0%	J1 = 0.000 * (I1)												
Contractor Markup	0.0%	K1 = 0.000 * (I1+J1)												
Engineering Design	0.0%	L1 = 0.000 * (I1+J1+K1)												
Resident Engineering	0.0%	M1 = 0.000 * (I1+J1+K1)												
Contingency	30.0%	N1 = 0.300 * (I1+J1+K1+L1+M1)												
Subtotal (O1 = J1+K1+L1+M1+N1)												9,000	9,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												5,025,000	4,786,000	

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Table B1.1-U4a Cost Estimate - Munitions Testing Medium Group
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	2	30	0.13	/BCY-YR	90,000	BCY	1.000	1.000	1.000		13,000	387,000	202,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												5,000	151,000	79,000
Contingency												6,000	181,000	94,000
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													7,280,000	6,670,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - No Action	LS	1	--	0.00	/SY	28,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
COST CODE														
J = 0.033 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.013 * (I+J+K)														
N = 0.283 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - Site Reverses	A	1	30	\$,400,000	/EA-YR	1	EA	1.000	1.000	1.000		6,000	186,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)														
COST CODE														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S)														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (T)														
Subtotal (U = H+T)														

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Table B2.1-A2 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A2: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
A - No Action	LS	1	--	0.00	28,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (A)												0	0
INDIRECT CAPITAL COSTS													
Mob/Demob													
Indirects, Overhead & Profit													
Engineering Design													
Resident Engineering													
Contingency													
Subtotal (G =B+C+D+E+F)												0	0
TOTAL CAPITAL COSTS (H = A+G)												0	0

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Table B2.1-A2 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A2: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Subgrade Preparation Prior to Installing Cover	LS	1	--	0.06	/SY	28,000	SY	1,000	1,000	1,000			2,000	2,000
A - Soil Cover for Potential Agent Areas	LS	1	--	9.50	/SY	28,000	SY	1,000	1,000	1,000			304,000	304,000
A - Excavation of Borrow Material	LS	1	--	1.89	/BCY	4,600	BCY	1,000	1,000	1,000			10,000	10,000
A - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	4,600	BCY	1,000	1,500	1,000			7,000	7,000
A - Backfill with Borrow Material	LS	1	--	1.72	/BCY	4,600	BCY	1,000	1,000	1,000			9,000	9,000
A - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	28,000	SY	1,000	1,000	1,100	Disturbance		6,000	6,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
COST CODE														
J = 0.033 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.013 * (I+J+K)														
N = 0.283 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - Soil Cover for Potential Agent Areas	A	1	30	0.32	/SY-YR	28,000	SY	1,000	1,000	1,000		10,000	307,000	163,000
A - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)														
COST CODE														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S)														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												16,000	492,000	281,000
												8,000	192,000	102,000
												7,000	205,000	109,000
												13,000	387,000	210,000
												30,000	1,511,000	1,093,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												1,510,000		
												1,990,000		

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Table B2.1-A3

Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A3: Soil Washing (Solution Washing); Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Salts,Treated Soils,Isolated Exceedances)	LS	1	--	5.72	/BCY	1,770	BCY	1.000	1.000	1.000		12,000	12,000	12,000
A - On-Post Hazardous Waste Landfill Closure (Salts,Treated Soils,Isolated Excess	LS	2	--	3.80	/BCY	1,770	BCY	1.000	1.000	1.000		8,000	8,000	7,000
Subtotal (A)												19,000	19,000	
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												17,000	17,000	17,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Caustic Washing of Agent Soil	LS	1	--	76.95	/BCY	63		1.000	1.000	1.000		6,000	6,000	6,000
A - Treatment of Effluent from Caustic Washing	LS	1	--	245.00	/BCY	63		1.000	1.000	1.000		18,000	18,000	18,000
Subtotal (A1)												23,000	23,000	23,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: F														
Mob/Demob	5.0%	B1 = 0.050 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	4.5%	D1 = 0.045 * (A1+B1+C1)												
Resident Engineering	2.0%	E1 = 0.020 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												14,000	14,000	14,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												73,000	73,000	73,000

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Table B2.1-A3 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A3: Soil Washing (Solution Washing): Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost	PW Cost	
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	1	--	4.89	/SY	28,000	SY	1,000	1,000	1,000		158,000	158,000	
A - Excavation of Soil with Agent and Isolated Exceedances	LS	2	--	4.55	/BCY	670	BCY	1,000	1,000	1,000		3,000	3,000	
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	2	--	1.07	/BCY-MILE	63		1,000	2,000	1,000		200	100	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	2	--	1.55	/BCY	1,770	BCY	1,000	1,000	1,000		3,000	3,000	
A - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	1,770	BCY	1,000	1,000	1,000		2,000	2,000	
A - On-Post Hazardous Waste Landfill (Salts, Treated Soils, Isolated Exceedances)	LS	2	--	4.07	/BCY	1,770	BCY	1,000	1,000	1,000		8,000	8,000	
A - Excavation of Borrow Material	LS	2	--	1.89	/BCY	670	BCY	1,000	1,000	1,000		1,000	1,000	
A - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	670	BCY	1,000	1,500	1,000		1,000	1,000	
A - Backfill with Borrow Material	LS	2	--	1.72	/BCY	670	BCY	1,000	1,000	1,000		1,000	1,000	
A - Installation of 6 inches of Topsoil	LS	2	--	3.24	/SY	1,950	SY	1,000	1,000	1,000		7,000	7,000	
A - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	1,950	SY	1,000	1,000	1,100	Disturbance	400	400	
Subtotal (I)												185,000	183,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects Overhead & Profit				4.5%								8,000	8,000	
Engineering Design				41.5%								80,000	80,000	
Resident Engineering				0.5%								1,000	1,000	
Contingency				1.8%								5,000	5,000	
				30.0%								84,000	83,000	
Subtotal (O) = J+K+L+M+N												178,000	177,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Caustic Washing of Agent Soil	LS	2	--	212.30	/BCY	63	BCY	1,000	1,000	1,000		15,000	15,000	
A - Treatment of Effluent from Caustic Washing	LS	2	--	17.80	/BCY	63	BCY	1,000	1,000	1,000		1,000	1,000	
Subtotal (I1)												17,000	16,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup				5.0%								1,000	1,000	
Engineering Design				10.0%								2,000	2,000	
Resident Engineering				0.0%								0	0	
Contingency				2.0%								400	400	
				30.0%								6,000	6,000	
Subtotal (O1) = J1+K1+L1+M1+N1												9,000	8,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												388,000	385,000	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On-Post Hazardous Waste Landfill Closure (Soils, Treated Soils, Isolated Excess)														
	A	2	30	0.13	1,770	/BCY-YR	1.000	1.000	1.000		300	8,000	4,000	
Subtotal (P)												300	8,000	4,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 39.0% Q = 0.390 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
Subtotal (S = Q+R)												200	6,000	3,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												500	14,000	7,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													476,000	464,000

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Table B2.1-A4 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln) Page 1 of 3

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Isolated Excesses and Particulates)	LS	2	--	5.72	/BCY	610	BCY	1.000	1.000	1.000	1.000	4,000	4,000	4,000
A - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	610	BCY	1.000	1.000	1.000	1.000	3,000	3,000	2,000
Subtotal (A)												7,000		6,000
INDIRECT CAPITAL COSTS														
COST CODE: LISS														
Mob/Demob	3.3%												200	200
Indirects, Overhead & Profit	36.0%												3,000	2,000
Engineering Design	3.0%												300	300
Resident Engineering	1.3%												100	100
Contingency	26.3%												3,000	2,000
Subtotal (G = B+C+D+E+F)													6,000	6,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	63	BCY	1.000	1.000	1.000	1.000	3,000	3,000	3,000
Subtotal (A1)													3,000	3,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%												100	100
Contractor Markup	10.0%												300	300
Engineering Design	9.0%												300	300
Resident Engineering	3.0%												100	100
Contingency	30.0%												1,000	1,000
Subtotal (G1 = B1+C1+D1+E1+F1)													2,000	2,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													17,000	16,000

Table B2.1-A4 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	28,000	SV	1,000	1,000	1,000		158,000		148,000
A - Excavation of Soil with Agent and Isolated Exceedances	LS	3	--	4.55	/BCY	670	BCY	1,000	1,000	1,000		3,000		3,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	63	BCY	1,000	2,000	1,000		200		100
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	610	BCY	1,000	1,000	1,000		1,000		1,000
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	610	BCY	1,000	1,000	1,000		1,000		1,000
A - On-Post Hazardous Waste Landfill (Isolated Exceedances and Particulates)	LS	3	--	4.07	/BCY	610	BCY	1,000	1,000	1,000		3,000		3,000
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	610	BCY	1,000	1,000	1,000		1,000		1,000
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	63	BCY	1,000	2,000	1,000		100		100
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	63	BCY	1,000	1,000	1,000		100		100
A - Excavation of Borrow Material	LS	3	--	1.89	/BCY	610	BCY	1,000	1,000	1,000		1,000		1,000
A - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	610	BCY	1,000	1,500	1,000		1,000		1,000
A - Backfill with Borrow Material	LS	3	--	1.72	/BCY	610	BCY	1,000	1,000	1,000		1,000		1,000
A - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	1,960	SY	1,000	1,000	1,000		7,000		7,000
A - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	1,960	SY	1,000	1,000	1,100	Disturbance	400		400
Subtotal (I)												177,000		167,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				4.5%	J = 0.045 * (I)									
Indirects, Overhead & Profit				41.5%	K = 0.415 * (I+J)									
Engineering Design				0.5%	L = 0.005 * (I+J+K)									
Resident Engineering				1.8%	M = 0.018 * (I+J+K)									
Contingency				30.0%	N = 0.300 * (I+J+K+L+M)									
Subtotal (O = J+K+L+M+N)													171,000	162,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	96.24	/BCY	63	BCY	1,000	1,000	1,000		7,000		6,000
Subtotal (I)												7,000		6,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.0%	J1 = 0.000 * (I1)									
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)									
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)									
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)									
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)									
Subtotal (O1 = J1+K1+L1+M1+N1)												4,000		4,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+O1+O1)												358,000		339,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On-Post Hazardous Waste Landfill Closure (Isolated Exceedances and Particul														
	A	3	30	0.13	610	BCY	1.000	1.000	1.000		100	3,000	1,000	1,000
Subtotal (P)														
											100	3,000	1,000	1,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
COST CODE: LLSL														
Q = 0.380 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
											40	1,000	1,000	1,000
											40	1,000	1,000	1,000
Subtotal (S = Q+R)														
											100	2,000	1,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
											200	5,000	2,000	2,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
												380,000	357,000	

Table B2.1-A5 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A5: Soil Washing (Solvent Washing); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Salts, Treated Soils, Isolated Excesses)	LS	1	--	5.72	/BCY	670	BCY	1.000	1.000	1.000		4,000	4,000	4,000
A - On-Post Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excess)	LS	2	--	3.80	/BCY	670	BCY	1.000	1.000	1.000		3,000	3,000	3,000
Subtotal (A)												7,000	7,000	7,000
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mod/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												8,000	8,000	8,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Solvent/Caustic Washing of Agent Soil	LS	1	--	32.55	/BCY	670	BCY	1.000	1.000	1.000		25,000	25,000	25,000
Subtotal (A1)												25,000	25,000	25,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: F														
Mod/Demob	5.0%	B1 = 0.050 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	4.5%	D1 = 0.045 * (A1+B1+C1)												
Resident Engineering	2.0%	E1 = 0.020 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												15,000	15,000	15,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												54,000	54,000	54,000

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Table B2.1-A5 Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A5: Soil Washing (Solvent Washing); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	1	--	4.89	/SY	28,000	SY	1,000	1,000	1,000		158,000	158,000	158,000
A - Excavation of Soil with Agent and Isolated Excesses	LS	2	--	4.55	/BCY	670	BCY	1,000	1,000	1,000		3,000	3,000	3,000
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	2	--	1.07	/BCY-MILE	63	BCY	1,000	2,000	1,000		200	200	100
A - Load Treated Soil for Transport to Hazardous Landfill	LS	2	--	1.55	/BCY	670	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	670	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - On-Post Hazardous Waste Landfill (Salts Treated Soils Isolated Excesses)	LS	2	--	4.07	/BCY	670	BCY	1,000	1,000	1,000		3,000	3,000	3,000
A - Excavation of Borrow Material	LS	2	--	1.89	/BCY	670	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	670	BCY	1,000	1,500	1,000		1,000	1,000	1,000
A - Backfill with Borrow Material	LS	2	--	1.72	/BCY	670	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	1,950	SY	1,000	1,000	1,000		7,000	7,000	7,000
A - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	1,950	SY	1,000	1,000	1,100	Disturbance	400	400	400
Subtotal (I)												178,000	178,000	175,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				4.5%									8,000	8,000
Indirects, Overhead & Profit				41.5%									76,000	76,000
Engineering Design				0.5%									1,000	1,000
Resident Engineering				1.8%									5,000	5,000
Contingency				30.0%									80,000	80,000
Subtotal (O = J+K+L+M+N)												170,000	170,000	169,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Solvent/Caustic Washing of Agent Soil	LS	2	--	248.53	/BCY	63	BCY	1,000	1,000	1,000		18,000	18,000	17,000
Subtotal (I1)												18,000	18,000	17,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				5.0%									1,000	1,000
Contractor Markup				10.0%									2,000	2,000
Engineering Design				0.0%									0	0
Resident Engineering				2.0%									400	400
Contingency				30.0%									6,000	6,000
Subtotal (O1 = J1+K1+L1+M1+N1)												9,000	9,000	8,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												374,000	374,000	371,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
A - On-Port Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excess													
	A	2	30	0.13	670	BCY	1.000	1.000	1.000		100	3,000	2,000
Subtotal (P)											100	3,000	2,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: LLSL													
Indirects, Overhead & Profit 39.0%													
Contingency 30.0%													
Subtotal (S = Q+R)											40	1,000	1,000
Subtotal (S = Q+R)											100	2,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											200	5,000	3,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OQ+T)												433,000	427,000

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Table B2.2-A1 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - No Action	LS	1	--	0.00	/SY	270,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE														
LS														
3.3%														
B = 0.033 * (A)														
39.0%														
C = 0.390 * (A+B)														
3.0%														
D = 0.030 * (A+B+C)														
1.3%														
E = 0.013 * (A+B+C)														
28.3%														
F = 0.283 * (A+B+C+D+E)														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
0														
0														

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Table B2.2-A1
Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - No Action	LS	1	--	0.00	/SY	270,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (T)													0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mo/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
Subtotal (O = J+K+L+M+N)													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													2,000	38,000
Contingency													3,000	41,000
Subtotal (P)													5,000	79,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
TOTAL O&M COSTS (U = H+T)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
TOTAL O&M COSTS (U = H+T)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

Table B2.2-A2 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A2: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost							Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS													
A - No Action													
	LS	1	--	0.00	270,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT CAPITAL COSTS													
Subtotal (A)													
INDIRECT CAPITAL COSTS													
Mob/Demob													
3.3%													
B = 0.033 * (A)													
Indirects, Overhead & Profit													
38.0%													
C = 0.380 * (A+B)													
Engineering Design													
3.0%													
D = 0.030 * (A+B+C)													
Resident Engineering													
1.3%													
E = 0.013 * (A+B+C)													
Contingency													
26.3%													
F = 0.263 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)													
0													
TOTAL CAPITAL COSTS (H = A+G)													
0													

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																	
A - Subgrade Preparation Prior to Installing Cover	LS	1	--	0.06	/SY	270,000	SY	1.000	1.000	1.000		18,000		18,000			18,000
A - Soil Cover for Potential Agent Areas	LS	1	--	9.50	/SY	270,000	SY	1.000	1.000	1.000		2,927,000		2,927,000			2,927,000
A - Excavation of Borrow Material	LS	1	--	1.89	/BCY	66,000	BCY	1.000	1.000	1.000		142,000		142,000			142,000
A - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	66,000	BCY	1.000	1.500	1.000		97,000		97,000			97,000
A - Backfill with Borrow Material	LS	1	--	1.72	/BCY	66,000	BCY	1.000	1.000	1.000		130,000		130,000			130,000
A - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	270,000	SY	1.000	1.000	1.100	Disturbance	61,000		61,000			61,000
INDIRECT O&M COSTS (OPERATIONS)																	
Subtotal (I)												3,378,000		3,378,000			3,378,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
A - Site Reviews	A	2	30	0.32	/SY-YR	270,000	SY	1.000	1.000	1.000		99,000		99,000			1,483,000
A - Soil Cover for Potential Agent Areas	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000		6,000			83,000
Subtotal (O = J+K+L+M+N)												2,848,000		2,848,000			2,848,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
Subtotal (P)												105,000		105,000			1,586,000
TOTAL O&M COSTS (T = I+O+P+S)																	
Subtotal (S)												41,000		41,000			619,000
Indirects, Overhead & Profit												44,000		44,000			681,000
Contingency												85,000		85,000			1,280,000
Subtotal (S)												189,000		189,000			9,090,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)																	

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Table B2.2-A3 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A3: Soil Washing (Solution Washing); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
A - On-Post Hazardous Waste Landfill (Salts, Treated Soils, Isolated Excesses)	LS	1	--	5.72	/BCY	8,550	BCY	1.000	1.000	1.000		56,000	56,000		56,000
A - On-Post Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excesses)	LS	2	--	3.80	/BCY	8,550	BCY	1.000	1.000	1.000		37,000	37,000		35,000
Subtotal (A)															
INDIRECT CAPITAL COSTS															
MOB/Demob															
Cost Code: LSS															
B = 0.033 * (A)															
3.3%															
C = 0.360 * (A+B)															
36.0%															
D = 0.030 * (A+B+C)															
3.0%															
E = 0.013 * (A+B+C)															
1.3%															
F = 0.283 * (A+B+C+D+E)															
28.3%															
Subtotal (G = B+C+D+E+F)															
83,000															
Subtotal (H = A+G)															
166,000															
DIRECT SUBCONTRACT CAPITAL COSTS															
A - Caustic Washing of Agent Soil	LS	1	--	76.95	/BCY	450	BCY	1.000	1.000	1.000		40,000	40,000		40,000
A - Treatment of Effluent from Caustic Washing	LS	1	--	245.00	/BCY	450	BCY	1.000	1.000	1.000		126,000	126,000		126,000
Subtotal (A1)															
166,000															
Subtotal (I = A1+G+H)															
332,000															
INDIRECT SUBCONTRACT CAPITAL COSTS															
MOB/Demob															
Cost Code: F															
B1 = 0.050 * (A1)															
5.0%															
C1 = 0.100 * (A1+B1)															
10.0%															
D1 = 0.045 * (A1+B1+C1)															
4.5%															
E1 = 0.020 * (A1+B1+C1)															
2.0%															
F1 = 0.300 * (A1+B1+C1+D1+E1)															
30.0%															
Subtotal (G1 = B1+C1+D1+E1+F1)															
89,000															
Subtotal (I1 = A1+G1+H1)															
440,000															
TOTAL CAPITAL COSTS (H = A+G+A1+G1)															
602,000															

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	1	--	4.89	/SY	270,000	SY	1,000	1,000	1,000		1,507,000	1,507,000	1,507,000
A - Excavation of Soil with Agent and Isolated Exceedances	LS	2	--	4.55	/BCY	660	BCY	1,000	1,000	1,000		3,000	3,000	3,000
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	2	--	1.07	/BCY-MILE	450	BCY	1,000	2,500	1,000		1,000	1,000	1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	2	--	1.55	/BCY	8,550	BCY	1,000	1,000	1,000		15,000	15,000	14,000
A - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	8,550	BCY	1,000	2,000	1,000		21,000	21,000	20,000
A - On-Post Hazardous Waste Landfill (Salts, Treated Soils, Isolated Exceedances)	LS	2	--	4.07	/BCY	8,550	BCY	1,000	1,000	1,000		40,000	40,000	38,000
A - Excavation of Borrow Material	LS	2	--	1.89	/BCY	660	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	660	BCY	1,000	1,500	1,000		1,000	1,000	1,000
A - Backfill with Borrow Material	LS	2	--	1.72	/BCY	660	BCY	1,000	1,000	1,000		1,000	1,000	1,000
A - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	550	SY	1,000	1,000	1,000		2,000	2,000	2,000
A - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	550	SY	1,000	1,000	1,100	Disturbance	100	100	100
Subtotal (I)												1,593,000	1,593,000	1,593,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	4.5%	COST CODE: HLSS												
Indirects, Overhead & Profit	41.5%	J = 0.045 * (I)												
Engineering Design	0.5%	K = 0.415 * (I+J)												
Resident Engineering	1.8%	L = 0.005 * (I+J+K)												
Contingency	30.0%	M = 0.018 * (I+J+K)												
		N = 0.300 * (I+J+K+L+M)												
Subtotal (O) = J+K+L+M+N												1,538,000	1,538,000	1,538,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Caustic Washing of Agent Soil	LS	2	--	212.30	/BCY	450	BCY	1,000	1,000	1,000		109,000	109,000	104,000
A - Treatment of Effluent from Caustic Washing	LS	2	--	17.80	/BCY	450	BCY	1,000	1,000	1,000		9,000	9,000	9,000
Subtotal (I1)												118,000	118,000	113,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	5.0%	COST CODE: F												
Contractor Markup	10.0%	J1 = 0.050 * (I1)												
Engineering Design	0.0%	K1 = 0.100 * (I1+J1)												
Resident Engineering	2.0%	L1 = 0.000 * (I1+J1+K1)												
Contingency	30.0%	M1 = 0.020 * (I1+J1+K1)												
		N1 = 0.300 * (I1+J1+K1+L1+M1)												
Subtotal (O1) = J1+K1+L1+M1+N1												63,000	63,000	60,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												3,312,000	3,312,000	3,295,000

Table B2.2-A3

Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A3: Soil Washing (Solution Washing); Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On-Post Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excess)	A	2	30	0.13	/BCY-YR	8,550	BCY	1.000	1.000	1.000		1,000	37,000	19,000
Subtotal (P)														
1,000														
37,000														
19,000														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 30.0% Q = 0.380 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
500														
14,000														
15,000														
8,000														
Subtotal (S = Q+R)														
1,000														
30,000														
15,000														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
2,000														
88,000														
35,000														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
3,820,000														
3,770,000														

ATSY-A3.W01
SOILS DAA

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Table B2.2-A4 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Isolated Exceedances and Particulates)	LS	2	--	5.72	/BCY	220	BCY	1.000	1.000	1.000			1,000	1,000
A - On-Post Hazardous Waste Landfill Closure (Isolated Exceedances and Particulates)	LS	3	--	3.80	/BCY	220	BCY	1.000	1.000	1.000			1,000	1,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	450	BCY	1.000	1.000	1.000			19,000	18,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													35,000	34,000
ATSY-A4.W01														
SOILS DAA														
16-Jul-93														

Table B2.2-A4 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost				Factor		Factor		Total Cost	PW Cost	
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	270,000	BCY	1,000	1,000	1,000		1,507,000	1,436,000	
A - Excavation of Soil with Agent and Isolated Exceedances	LS	3	--	4.55	/BCY	660	BCY	1,000	1,000	1,000		3,000	3,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	450	BCY	1,000	2,500	1,000		1,000	1,000	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.35	/BCY	450	BCY	1,000	1,000	1,000		1,000	1,000	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	220	BCY	1,000	1,000	1,000		300	200	
A - On-Post Hazardous Waste Landfill (Isolated Exceedances and Particulates)	LS	3	--	4.07	/BCY	220	BCY	1,000	1,000	1,000		1,000	1,000	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	220	BCY	1,000	1,000	1,000		300	300	
A - Nonhazardous Treated Soil to Backfill for Backfill	LS	3	--	0.86	/BCY-MILE	450	BCY	1,000	2,500	1,000		1,000	1,000	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	450	BCY	1,000	1,000	1,000		1,000	1,000	
A - Excavation of Borrow Material	LS	3	--	1.89	/BCY	220	BCY	1,000	1,000	1,000		500	400	
A - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	220	BCY	1,000	1,500	1,000		300	300	
A - Backfill with Borrow Material	LS	3	--	1.72	/BCY	220	BCY	1,000	1,000	1,000		400	400	
A - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	520	SY	1,000	1,000	1,000		2,000	2,000	
A - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	520	SY	1,000	1,000	1,100	Disturbance	100	100	
Subtotal (f)												1,519,000	1,448,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	4.5%				J = 0.045 * (f)				COST CODE: HLSS				68,000	65,000
Indirects, Overhead & Profit	41.5%				K = 0.415 * (f+J)								659,000	627,000
Engineering Design	0.5%				L = 0.005 * (f+J+K)								11,000	11,000
Resident Engineering	1.8%				M = 0.018 * (f+J+K)								39,000	37,000
Contingency	30.0%				N = 0.300 * (f+J+K+L+M)								689,000	656,000
Subtotal (G = J+K+L+M+N)												1,467,000	1,396,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	96.24	/BCY	450	BCY	1,000	1,000	1,000		49,000	45,000	
Subtotal (h)												49,000	45,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob	0.0%				J1 = 0.000 * (f1)				COST CODE: D				0	0
Contractor Markup	10.0%				K1 = 0.100 * (f1+J1)								5,000	4,000
Engineering Design	0.0%				L1 = 0.000 * (f1+J1+K1)								0	0
Resident Engineering	2.0%				M1 = 0.020 * (f1+J1+K1)								1,000	1,000
Contingency	40.0%				N1 = 0.400 * (f1+J1+K1+L1+M1)								22,000	20,000
Subtotal (O1 = J1+K1+L1+M1+N1)												28,000	28,000	
TOTAL O&M COSTS (OPERATIONS) (OO = f+O+H1+O1)												3,064,000	2,913,000	

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Table B2.2-A4
Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
A - On-Post Hazardous Waste Landfill Closure (Isolated Exceedances and Partial													
	A	3	30	0.13	220	BCY-YR	1.000	1.000	1.000		30	1,000	500
Subtotal (P)													
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: LLSL													
Indirects, Overhead & Profit 36.0% Q = 0.390 * (P)													
Contingency 30.0% R = 0.300 * (P+Q)													
Subtotal (S = Q+R)													
Subtotal (T = P+S)													
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													
											100	2,000	1,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													
												3,100,000	2,950,000

ATSY-A4WQI
SOILS DAA
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Table B2.2-A5 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A5: Soil Washing (Solvent Washing); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Milage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Salts, Treated Soils, Isolated Exceedances)	LS	1	--	5.72	/BCY	660	BCY	1.000	1.000	1.000	1.000	4,000	4,000	4,000
A - On-Post Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excess)	LS	2	--	3.80	/BCY	660	BCY	1.000	1.000	1.000	1.000	3,000	3,000	3,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
MOB/DERMOB														
Cost Code: LLSS														
Indirects, Overhead & Profit	3.3%	B = 0.033 * (A)										200	200	200
Engineering Design	38.0%	C = 0.380 * (A+B)										3,000	3,000	3,000
Resident Engineering	1.3%	D = 0.030 * (A+B+C)										300	300	300
Contingency	28.3%	E = 0.013 * (A+B+C)										100	100	100
		F = 0.283 * (A+B+C+D+E)										3,000	3,000	3,000
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Solvent/Caustic Washing of Agent Soil	A	1	2	32.55	/BCY	450	BCY	1.000	1.000	1.000	1.000	17,000	17,000	16,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
Cost Code: F														
Mob/DerMob	5.0%	B1 = 0.050 * (A1)										1,000	1,000	1,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)										2,000	2,000	2,000
Engineering Design	4.5%	D1 = 0.045 * (A1+B1+C1)										1,000	1,000	1,000
Resident Engineering	2.0%	E1 = 0.020 * (A1+B1+C1)										400	400	400
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)										6,000	6,000	6,000
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													40,000	39,000

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Table B2.2.A5 Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A5: Soil Washing (Solvent Washing); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	1	--	4.89	/SY	270,000	SY	1,000	1,000	1,000		1,507,000		1,507,000
A - Excavation of Soil with Agent and Isolated Exceedances	LS	2	--	4.55	/BCY	660	BCY	1,000	1,000	1,000		3,000		3,000
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	2	--	1.07	/BCY-MILE	450	BCY	1,000	2,500	1,000		1,000		1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	2	--	1.55	/BCY	450	BCY	1,000	1,000	1,000		1,000		1,000
A - Transport of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	660	BCY	1,000	2,000	1,000		2,000		2,000
A - On-Post Hazardous Waste Landfill (Salts, Treated Solids, Isolated Exceedances)	LS	2	--	4.07	/BCY	660	BCY	1,000	1,000	1,000		3,000		3,000
A - Excavation of Borrow Material	LS	2	--	1.89	/BCY	660	BCY	1,000	1,500	1,000		1,000		1,000
A - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	660	BCY	1,000	1,500	1,000		1,000		1,000
A - Backfill with Borrow Material	LS	2	--	1.72	/BCY	660	BCY	1,000	1,000	1,000		1,000		1,000
A - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	520	SY	1,000	1,000	1,000		2,000		2,000
A - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	520	SY	1,000	1,000	1,100	Disturbance	100		100
Subtotal (I)												1,523,000		1,523,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				4.5%										
Indirects, Overhead & Profit				41.5%								68,000		68,000
Engineering Design				0.5%								11,000		11,000
Resident Engineering				1.8%								38,000		38,000
Contingency				30.0%								681,000		681,000
Subtotal (O = J+K+L+M+N)												1,470,000		1,470,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Solvent/Caustic Washing of Agent Soil	LS	2	--	248.53	/BCY	450	BCY	1,000	1,000	1,000		128,000		128,000
Subtotal (II)												128,000		128,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				5.0%								6,000		6,000
Contractor Markup				10.0%								13,000		13,000
Engineering Design				0.0%								0		0
Resident Engineering				2.0%								3,000		3,000
Contingency				30.0%								45,000		45,000
Subtotal (OI = JI+KI+LI+MI+NI)												68,000		68,000
TOTAL O&M COSTS (OPERATIONS) (OO = IO+II+OI)												3,188,000		3,188,000

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Table B2.2-A5

Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A5: Soil Washing (Solvent Washing); Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On-Post Hazardous Waste Landfill Closure (Salts, Treated Soils, Isolated Excess)	A	2	30	0.13	/BCY-YR	660	BCY	1.000	1.000	1.000		100	3,000	1,000
Subtotal (P)												100	3,000	1,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												40	1,000	1,000
Contingency												40	1,000	1,000
Subtotal (S = Q+R)												100	2,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												200	5,000	3,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													3,230,000	3,220,000

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Table B3.1-B1

Cost Estimate - Lake Sediments Medium Group
Alternative B1: No Additional Action (Provisions of FFA)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
B - No Action	LS	1	--	0.00	/SY	340,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														0
Indirects, Overhead & Profit														0
Engineering Design														0
Resident Engineering														0
Contingency														0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - Long Term Soil Monitoring, Lake Sediments	A	1	30	62,000.00	/EA-YR	1	EA	1.000	1.000	1.000		71,000	2,123,000	1,125,000
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														0
Contingency														0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													77,000	2,307,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													139,000	4,170,000
													4,170,000	2,210,000

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[illegible]

Table B3.1-B1a Cost Estimate - Lake Sediments Medium Group
Alternative B1a: Caps/Covers (Clay/Soil Cap) with Consolidation; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
B - Grubbing & Cleaning	LS	1	--	0.17	/SY	40,000	SY	1.000	1.000	1.000			8,000		8,000
B - Temporary Cutoff Wall	LS	1	--	44.00	/LF	2,500	LF	1.000	1.000	1.000			128,000		128,000
B - Soil Excavation	LS	1	--	3.91	/BCY	51,000	BCY	1.000	1.000	1.000			228,000		228,000
B - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	51,000	BCY	1.000	1.500	1.000			93,000		93,000
B - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	51,000	BCY	1.000	1.000	1.000			211,000		211,000
B - Backfill of Topsoil With Humic	LS	1	--	19.44	/BCY	51,000	BCY	1.000	1.000	1.000			1,131,000		1,131,000
B - Wetlands Restoration	LS	1	--	1.55	/SY	40,000	SY	1.000	1.000	1.000			71,000		71,000
Subtotal (I)															
													1,898,000		1,898,000
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				3.3%									61,000		61,000
Indirects, Overhead & Profit				37.8%									728,000		728,000
Engineering Design				0.5%									13,000		13,000
Resident Engineering				1.8%									46,000		46,000
Contingency				30.0%									815,000		815,000
Subtotal (O = J+K+L+M+N)													1,663,000		1,663,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - Long Term Soil Monitoring, Lake Sediments	A	1	30	62,000.00	/EA-YR	1	EA	1.000	1.000	1.000		71,000			
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000			
Subtotal (P)													77,000		77,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				38.0%									30,000		30,000
Contingency				30.0%									32,000		32,000
Subtotal (S)													62,000		62,000
Subtotal (T = I+O+P+S)													139,000		139,000
TOTAL O&M COSTS (T = I+O+P+S)													2,037,000		2,037,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													7,700,000		7,700,000

Table B3.1-B3 Cost Estimate - Lake Sediments Medium Group
Alternative B3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
B - Dredging	LS	1	--	794,497.00	/EA	1	EA	1.000	1.000	1.000		807,000	807,000	807,000
B - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	370,000	BCY	1.000	1.000	1.000		2,415,000	2,415,000	2,415,000
B - On-Post Hazardous Waste Landfill Closure	LS	6	--	3.80	/BCY	370,000	BCY	1.000	1.000	1.000		1,604,000	1,604,000	1,257,000
Subtotal (A)														
													4,926,000	4,579,000
INDIRECT CAPITAL COSTS														
Mod/Demob													160,000	148,000
Indirects, Overhead & Profit													1,920,000	1,795,000
Engineering Design													210,000	195,000
Resident Engineering													88,000	81,000
Contingency													1,917,000	1,782,000
Subtotal (G =B+C+D+E+F)													4,295,000	3,993,000
TOTAL CAPITAL COSTS (H = A+G)													9,222,000	8,571,000

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Table B3.1-B3 **Cost Estimate - Lake Sediments Medium Group**
Alternative B3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Description	Exp/Red Factor	Mileage Factor	Other Factor	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
B - Grubbing & Clearing	LS	2	--	0.17	/SY	40,000	SY		1.000	1.000	1.000	8,000	8,000	7,000	
B - Temporary Cutoff Wall	LS	2	--	44.00	/LF	2,500	LF		1.000	1.000	1.000	126,000	126,000	120,000	
B - Soil Excavation	LS	2	--	3.91	/BCY	51,000	BCY		1.000	1.000	1.000	226,000	226,000	217,000	
B - Dredging	A	2	5	9.82	/BCY	310,000	BCY		1.000	1.000	1.000	3,474,000	3,474,000	3,080,000	
B - Load Treated Soil for Transport to Hazardous Landfill	A	3	6	1.55	/BCY	370,000	BCY		1.000	1.000	1.000	654,000	654,000	553,000	
B - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	A	3	6	1.07	/BCY-MILE	370,000	BCY		1.000	2.000	1.000	904,000	904,000	763,000	
B - On-Post Hazardous Waste Landfill	A	3	6	-0.07	/BCY	370,000	BCY		1.000	1.000	1.000	1,718,000	1,718,000	1,451,000	
B - Backfill of Topsoil With Humic	LS	2	--	19.44	/BCY	51,000	BCY		1.000	1.000	1.000	1,131,000	1,131,000	1,078,000	
B - Wetlands Restoration	LS	2	--	1.55	/SY	40,000	SY		1.000	1.000	1.000	71,000	71,000	67,000	
Subtotal (I)													8,313,000	7,334,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob													322,000	284,000	
Indirects, Overhead & Profit				3.9%	J = 0.039 * (I)								3,368,000	2,971,000	
Engineering Design				0.5%	K = 0.300 * (I+J)								60,000	53,000	
Resident Engineering				1.8%	L = 0.005 * (I+J+K)								210,000	185,000	
Contingency				28.6%	M = 0.018 * (I+J+K)								3,529,000	3,113,000	
Subtotal (O = J+K+L+M+N)													7,499,000	6,607,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - On-Post Hazardous Waste Landfill Closure	A	6	30	0.13	/BCY-YR	370,000	BCY		1.000	1.000	1.000	55,000	1,372,000	636,000	
Subtotal (P)													55,000	1,372,000	636,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				30.0%	Q = 0.300 * (P)								21,000	248,000	
Contingency				30.0%	R = 0.300 * (P+Q)								23,000	265,000	
Subtotal (S)													44,000	1,107,000	514,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]													99,000	18,282,000	15,091,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = II+T)													27,900,000	23,700,000	

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Table B3.1-B6 Cost Estimate - Lake Sediments Medium Group
Alternative B6: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
B - Dredging	A	2	5	794,497.00	/EA	1	EA	1.000	1.000	1.000	1.000	807,000	807,000		804,000
B - On-Post Hazardous Waste Landfill	A	1	2	5.72	/BCY	370,000	BCY	1.000	1.000	1.000	1.000	2,415,000	2,415,000		2,358,000
B - On-Post Hazardous Waste Landfill Closure	A	1	7	3.80	/BCY	370,000	BCY	1.000	1.000	1.000	1.000	1,804,000	1,804,000		1,393,000
Subtotal (A)															
INDIRECT CAPITAL COSTS															
COST CODE: LMMS															
Mod/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (B = B+C+D+E+F)															
DIRECT SUBCONTRACT CAPITAL COSTS															
B - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	370,000	BCY	1.000	1.000	1.000	1.000	5,983,000	5,983,000		5,841,000
Subtotal (A1)															
INDIRECT SUBCONTRACT CAPITAL COSTS															
COST CODE: C															
Mod/Demob															
Contractor Markup															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (G1 = B1+C1+D1+E1+F1)															
TOTAL CAPITAL COSTS (H = A+G+A1+G1)															
													19,301,000	18,348,000	

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Table B3.1-B6 Cost Estimate - Lake Sediments Medium Group
Alternative B6: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other	Factor	Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																	
B - Grubbing & Cleaning	LS	2	--	0.17	/SY	40,000	SY	1,000	1,000	1,000	1,000	1,000	1,000	8,000			7,000
B - Temporary Outfall Wall	LS	2	--	44.00	/LF	2,500	LF	1,000	1,000	1,000	1,000	1,000	1,000	126,000			120,000
B - Soil Excavation	A	2	5	3.91	/BCY	51,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	228,000			202,000
B - Dredging	A	2	5	9.82	/BCY	310,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	3,474,000			3,080,000
B - Load Treated Soil for Transport to Hazardous Landfill	A	3	6	1.55	/BCY	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	654,000			553,000
B - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	6	1.07	/BCY-MILE	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	678,000			572,000
B - Load Treated Soil for Transport to Hazardous Landfill	A	3	6	1.55	/BCY	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	654,000			553,000
B - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	A	3	6	1.07	/BCY-MILE	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	452,000			381,000
B - On-Post Hazardous Waste Landfill	A	3	6	4.07	/BCY	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	1,716,000			1,451,000
B - Backfill of Topsoil With Humic	A	3	6	19.44	/BCY	51,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	1,131,000			955,000
B - Wetlands Restoration	A	3	6	1.55	/SY	40,000	SY	1,000	1,000	1,000	1,000	1,000	1,000	71,000			60,000
Subtotal (I)														9,184,000			7,933,000
INDIRECT O&M COSTS (OPERATIONS)																	
Mod/Demob																	
Indirects, Overhead & Profit				4.5%										414,000			357,000
Engineering Design				38.0%										3,747,000			3,233,000
Resident Engineering				1.5%										200,000			173,000
Contingency				2.0%										267,000			230,000
				30.0%										4,147,000			3,578,000
Subtotal (O) = J+K+L+M+N														8,775,000			7,571,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
B - Thermal Desorption (Saturated Soil)	A	3	6	73.64	/BCY	370,000	BCY	1,000	1,000	1,000	1,000	1,000	1,000	31,093,000			28,251,000
Subtotal (I1)														31,093,000			28,251,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
Mod/Demob																	
Contractor Markup				0.0%										0			0
Engineering Design				10.0%										3,109,000			2,625,000
Resident Engineering				0.0%										0			0
Contingency				2.0%										684,000			578,000
				40.0%										13,855,000			11,782,000
Subtotal (O1) = J1+K1+L1+M1+N1														17,749,000			14,984,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+I1+O1)														66,810,000			56,739,000

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Table B3.1-B6 Cost Estimate - Lake Sediments Medium Group
Alternative B6: Direct Thermal Desorption (Direct Heating) Page 3 of 3

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - On-Post Hazardous Waste Landfill Closure	A	7	30	0.13	/BCY-YR	370,000	BCY	1.000	1.000	1.000		55,000	1,317,000	583,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												21,000	514,000	231,000
Contingency												23,000	549,000	247,000
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													88,500,000	76,200,000

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Table B3.1-B10 Cost Estimate - Lake Sediments Medium Group
Alternative B10: Caps/Covers (Clay/Soil Cap) with Consolidation; In Situ Biological Treatment (Aerobic Biodegradation)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
INDIRECT CAPITAL COSTS															
Subtotal (A)													0		0
COST CODE															
0.0%													0		0
0.0%													0		0
0.0%													0		0
0.0%													0		0
0.0%													0		0
0.0%													0		0
Subtotal (G = B+C+D+E+F)													0		0
TOTAL CAPITAL COSTS (H = A+G)															
													0		0

Table B3.1-B10 Cost Estimate - Lake Sediments Medium Group
Alternative B10: Caps/Covers (Clay/Soil Cap) with Consolidation; In Situ Biological Treatment (Aerobic Biodegradation)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
B - Grubbing & Clearing	LS	1	--	0.17	/SY	40,000	SY	1.000	1.000	1.000		8,000	8,000	8,000	
B - Temporary Outfall Wall	LS	1	--	44.00	/LF	2,500	LF	1.000	1.000	1.000		126,000	126,000	126,000	
B - In Situ Bioremediation	A	1	30	34.70	/BCY	310,000	BCY	1.000	1.000	1.000		12,276,000	6,505,000	6,505,000	
B - Soil Excavation	LS	1	--	3.91	/BCY	51,000	BCY	1.000	1.000	1.000		228,000	228,000	228,000	
B - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	51,000	BCY	1.000	1.500	1.000		83,000	83,000	83,000	
B - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	51,000	BCY	1.000	1.000	1.000		211,000	211,000	211,000	
B - Backfill of Topsoil With Humic	LS	1	--	19.44	/BCY	51,000	BCY	1.000	1.000	1.000		1,131,000	1,131,000	1,131,000	
B - Wetlands Restoration	LS	1	--	1.55	/SY	40,000	SY	1.000	1.000	1.000		71,000	71,000	71,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				Subtotal (I)		COST CODE		M/LMSO				14,143,000			
Indirects, Overhead & Profit				2.0%		J = 0.020 * (I)						263,000			
Engineering Design				38.0%		K = 0.380 * (I+J)						5,628,000			
Resident Engineering				3.0%		L = 0.030 * (I+J+K)						602,000			
Contingency				31.3%		M = 0.030 * (I+J+K)						620,000			
							N = 0.313 * (I+J+K+L+M)						6,454,000		
							Subtotal (O = J+K+L+M+N)						13,595,000		
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - No Action	A	1	30	0.00	/SY	340,000	SY	1.000	1.000	1.000		0	0	0	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				Subtotal (P)		COST CODE		L/LSL				0			
Contingency				38.0%		Q = 0.380 * (P)						0			
							R = 0.300 * (P+Q)						0		
							Subtotal (S)						0		
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]															
0															
27,728,000															
16,415,000															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
27,700,000															
16,400,000															
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Table B3.2-B1 Cost Estimate - Surficial Soils Medium Group
Alternative B1: No Additional Action (Provisions of FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
B - No Action	LS	1	--	0.00	/SY	5,500,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mobile/Demob	3.3%	COST CODE LLSS												
Indirects, Overhead & Profit	29.0%	B = 0.033 * (A)												
Engineering Design	3.0%	C = 0.390 * (A+B)												
Resident Engineering	1.3%	D = 0.030 * (A+B+C)												
Contingency	26.3%	E = 0.013 * (A+B+C)												
		F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														

Table B3.2-B1 Cost Estimate - Surficial Soils Medium Group
Alternative B1: No Additional Action (Provisions of FTA)

Cost Item	Crest Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
B - No Action	LS	1	--	0.00	/SY	5,500,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
COST CODE														
J = 0.003 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.013 * (I+J+K)														
N = 0.263 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - Long Term Soil Monitoring, Surficial Soils	A	1	30	19,000.00	/EA-YR	1	EA	1.000	1.000	1.000		22,000	650,000	345,000
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
Subtotal (P)														
COST CODE														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
Subtotal (T = I+O+P+S)														
Subtotal (U = I+T)														
TOTAL O&M COSTS (T = I+O+P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1995 (\$)	1995 (\$)	PW Cost
				Unit Cost								Annual Cost	Total Cost		
DIRECT CAPITAL COSTS															
B - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	810,000	BCY	1.000	1.000	1.000		5,287,000	5,287,000		5,287,000
B - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	810,000	BCY	1.000	1.000	1.000		3,513,000	3,513,000		3,186,000
													8,800,000	8,473,000	
INDIRECT CAPITAL COSTS															
Mob/Demob													286,000	275,000	
Indirects, Overhead & Profit													3,430,000	3,303,000	
Engineering Design													375,000	362,000	
Resident Engineering													161,000	155,000	
Contingency													3,384,000	3,258,000	
													7,636,000	7,353,000	
													16,436,000	15,826,000	
TOTAL CAPITAL COSTS (H = A+G)															

Table B3.2-B3 Cost Estimate - Surficial Soils Medium Group
Alternative B3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Exp/Rcd Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
B - Soil Excavation	LS	2	--	3.91	/BCY	810,000	BCY	1.000	1.000	1.000			3,614,000	3,442,000
B - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	810,000	BCY	1.000	2.500	1.000			2,473,000	2,355,000
B - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	810,000	BCY	1.000	1.000	1.000			3,762,000	3,593,000
B - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	5,500,000	SY	1.000	1.000	1.000			20,336,000	19,367,000
B - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	5,500,000	SY	1.000	1.000	1.100	Disturbance		1,243,000	1,184,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													31,427,000	29,931,000
Indirects, Overhead & Profit													1,218,000	1,180,000
Engineering Design													12,732,000	12,125,000
Resident Engineering													227,000	216,000
Contingency													684,000	651,000
													12,541,000	11,844,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	810,000	BCY	1.000	1.000	1.000		120,000	3,365,000	1,705,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													47,000	665,000
Contingency													50,000	711,000
													97,000	1,376,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												217,000	64,908,000	59,108,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													81,300,000	74,900,000

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Table B3.3-B9
Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Quantity	Units	Volume		Mileage		Other		1995 (\$)	1995 (\$)	PW Cost
				Unit Cost	Units			Factor	Factor	Factor	Factor	Factor	Factor			
DIRECT CAPITAL COSTS																
Subtotal (A)																
Subtotal (G = B+C+D+E+F)																
INDIRECT CAPITAL COSTS																
Mod/Demob	3.3%													0	0	0
Indirects, Overhead & Profit	39.0%													0	0	0
Engineering Design	3.0%													0	0	0
Resident Engineering	1.3%													0	0	0
Contingency	26.3%													0	0	0
Subtotal (A)																
Subtotal (G = B+C+D+E+F)																
TOTAL CAPITAL COSTS (H = A+G)																
Subtotal (A)																
Subtotal (G = B+C+D+E+F)																
Subtotal (H = A+G)																

Table B3.3-B9 Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

Cost Item	Cost Type	Start Year	End Year	1992(\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
B - Agricultural Practices	LS	1	--	0.20	/SY	25,000	SY	1,000	1,000	1,000		6,000	6,000	6,000	
B - Habitat Modification	A	1	3	0.17	/SY	25,000	SY	1,000	1,000	1,000		5,000	5,000	5,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob	3.3%			J = 0.033 * (I)			Subtotal (I)			LLSS			11,000	10,000	
Indirects, Overhead & Profit	38.0%			K = 0.380 * (I+J)			300			300			300	300	
Engineering Design	0.5%			L = 0.005 * (I+J+K)			4,000			4,000			4,000	4,000	
Resident Engineering	1.3%			M = 0.013 * (I+J+K)			100			100			100	100	
Contingency	28.3%			N = 0.283 * (I+J+K+L+M)			200			200			200	200	
Subtotal (O = J+K+L+M+N)															
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - Long Term Soil Monitoring, Ditches and Drainage Areas	A	4	30	16,000.00	/EA-YR	1	EA	1,000	1,000	1,000		18,000	483,000	243,000	
B - Site Reviews	A	4	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	166,000	82,000	
B - Habitat Modification	A	4	30	0.01	/SY-YR	25,000	SY	1,000	1,000	1,000		200	4,000	2,000	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit	38.0%			Q = 0.380 * (P)			Subtotal (P)			LLSL			25,000	684,000	327,000
Contingency	30.0%			R = 0.300 * (P+Q)			10,000			10,000			10,000	259,000	127,000
Subtotal (S)															
20,000															
536,000															
263,000															
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]															
44,000															
1,219,000															
609,000															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
1,220,000															
609,000															

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Units	Quantity	Units	Volume		Other		1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
				Unit Cost	Unit Cost				Factor	Factor	Factor	Factor				
DIRECT CAPITAL COSTS																
Subtotal (A)																
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Table B3.2-B9 Cost Estimate - Surficial Soils Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
B - Agricultural Practices	A	1	4	0.20	/SY	5,500,000	SV	1.000	1.000	1.000		1,255,000	1,255,000		1,198,000
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - Long Term Soil Monitoring, Surficial Soils	A	4	30	19,000.00	/EA-YR	1	EA	1.000	1.000	1.000		22,000	22,000		288,000
B - Site Reviews	A	4	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	6,000		82,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit															
Contingency															
TOTAL O&M COSTS (T = I+O+P+S)															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)															

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Table B3.2-B11 **Cost Estimate - Surficial Soils Medium Group**
Alternative B11: In Situ Thermal Treatment (Surface Soil Heating)

Table B3.2-B11 Cost Estimate - Surficial Soils Medium Group
Alternative B11: In Situ Thermal Treatment (Surface Soil Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
B - Installation of 6 inches of Topsoil	A	1	27	3.24	/SY	5,500,000	SY	1.000	1.000	1.000		20,338,000			11,590,000
B - Revegetation of Disturbed Areas	A	1	27	0.18	/SY	5,500,000	SY	1.000	1.000	1.000	Disturbance	1,243,000			708,000
Subtotal (f)															
INDIRECT O&M COSTS (OPERATIONS)															
COST CODE: LLSL															
Mob/Demob															
Indirects, Overhead & Profit												701,000			389,000
Engineering Design												8,889,000			4,948,000
Resident Engineering												155,000			88,000
Contingency												542,000			309,000
												8,500,000			5,410,000
Subtotal (O = J+K+L+M+N)															
												19,597,000			11,154,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
B - In Situ Surface Soil Heating	A	1	27	27.30	/SY	5,500,000	SY	1.000	1.000	1.000		171,346,000			97,573,000
Subtotal (H)															
												171,346,000			97,573,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
COST CODE: H															
Mob/Demob															
Contractor Markup															
Engineering Design												11,894,000			8,830,000
Resident Engineering												817,000			522,000
Contingency												3,967,000			2,098,000
												75,170,000			42,805,000
Subtotal (O1 = J1+K1+L1+M1+N1)															
												81,747,000			52,248,000
TOTAL O&M COSTS (OPERATIONS) (OO = H+O+H1+O1)															
												304,258,000			173,280,000

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**Cost Estimate - Surficial Soils Medium Group
Alternative B11: In Situ Thermal Treatment (Surface Soil Heating)**

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - No Action	A	27	30	0.00	/SY	5,500,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (P)												0	0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: 0														
Indirects, Overhead & Profit												0	0	0
Contingency												0	0	0
Subtotal (S = Q+R)												0	0	0
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												0	0	0
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													323,000,000	192,000,000

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Table B3.3-B1 Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
B - No Action	LS	1	--	0.00	/SY	25,000	SY	1,000	1,000	1,000			0	0
INDIRECT CAPITAL COSTS														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demo														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
													0	0

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
B - No Action	LS	1	--	0.00	/SY	25,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)												0	0	0
COST CODE														
J = 0.033 * (I)												0	0	0
K = 0.390 * (I+J)												0	0	0
L = 0.005 * (I+J+K)												0	0	0
M = 0.013 * (I+J+K)												0	0	0
N = 0.283 * (I+J+K+L+M)												0	0	0
Subtotal (O = J+K+L+M+N)												0	0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - Long Term Soil Monitoring, Ditches and Drainage Areas	A	1	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000		16,000	548,000	280,000
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)												24,000	733,000	388,000
COST CODE														
Q = 0.390 * (P)												10,000	286,000	151,000
R = 0.300 * (P+Q)												10,000	306,000	162,000
Subtotal (S)												20,000	591,000	313,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												44,000	1,324,000	702,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													1,320,000	702,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
B - Fences	LS	1	--	15.00	/LF	27,000	LF	1.000	1.000	1.000		482,000	482,000	482,000
Subtotal (A)													482,000	482,000
INDIRECT CAPITAL COSTS														
Mod/Demob	LLSS													
Indirects, Overhead & Profit	3.3%	B = 0.033 * (A)												
Engineering Design	38.0%	C = 0.380 * (A+B)												
Resident Engineering	3.0%	D = 0.030 * (A+B+C)												
Contingency	1.3%	E = 0.013 * (A+B+C)												
	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													411,000	411,000
TOTAL CAPITAL COSTS (H = A+G)													873,000	873,000
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Table B3.3-B2 Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B2: Biota Management (Exclusion, Habitat Modification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
B - Habitat Modification	A	1	3	0.17	/SY	25,000	SY	1.000	1.000	1.000	-	5,000	5,000	5,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													5,000	5,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - Fences	A	2	30	0.75	/LF-YR	27,000	LF	1.000	1.000	1.000		23,000	670,000	350,000
B - Habitat Modification	A	3	30	0.01	/SY-YR	25,000	SY	1.000	1.000	1.000		200	5,000	2,000
B - Long Term Soil Monitoring, Ditches and Drainage Areas	A	3	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000		16,000	511,000	259,000
B - Site Reviews	A	3	30	5,000.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (O = J+K+L+M+N)												4,000	4,000	4,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)													48,000	689,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)													19,000	272,000
Indirects, Overhead & Profit													20,000	291,000
Contingency													38,000	564,000
Subtotal (S)													86,000	1,271,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (T)													3,340,000	21,400,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
Subtotal (U)													3,340,000	21,400,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume		Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
								Factor	Mileage Factor					
DIRECT CAPITAL COSTS														
B - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	25,000	BCY	1.000	1.000	1.000		163,000	163,000	163,000
B - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	25,000	BCY	1.000	1.000	1.000		106,000	106,000	103,000
													272,000	266,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob													9,000	9,000
Indirects, Overhead & Profit													109,000	107,000
Engineering Design													12,000	11,000
Resident Engineering													5,000	5,000
Contingency													107,000	105,000
													241,000	237,000
Subtotal (G-B+C+D+E+F)													513,000	503,000
TOTAL CAPITAL COSTS (H = A+G)														

Table B3.3-B3 **Cost Estimate - Ditches/Drainage Areas Medium Group**
Alternative B3: Landfill (On-Post Landfill)

Cost Item		Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Exp/Rcd	Mileage	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
					Unit Cost			Factor	Factor	Factor		Total Cost	PW Cost	
DIRECT O&M COSTS (OPERATIONS)														
B - Soil Excavation														
B - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	--	3.91	25,000	/BCY	1.000	1.000	1.000	1.000	112,000	108,000	
B - On-Post Hazardous Waste Landfill	LS	2	--	--	1.07	25,000	/BCY-MILE	1.000	3.000	1.000	1.000	92,000	87,000	
B - Excavation of Borrow Material	LS	2	--	--	4.07	25,000	/BCY	1.000	1.000	1.000	1.000	116,000	111,000	
B - Transportation of Borrow Material to Backfill Area	LS	2	--	--	1.89	25,000	/BCY	1.000	1.000	1.000	1.000	54,000	51,000	
B - Backfill with Borrow Material	LS	2	--	--	0.86	25,000	/BCY-MILE	1.000	1.500	1.000	1.000	37,000	36,000	
B - Installation of 6 Inches of Topsoil	LS	2	--	--	1.72	25,000	/BCY	1.000	1.000	1.000	1.000	49,000	47,000	
B - Revegetation of Disturbed Areas	LS	2	--	--	3.24	25,000	/SY	1.000	1.000	1.000	1.000	92,000	89,000	
					0.18	25,000	/SY	1.000	1.000	1.100	Disturbance	6,000	5,000	
Subtotal (T)												557,000	531,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit					3.9%							22,000	21,000	
Engineering Design					40.3%							233,000	222,000	
Resident Engineering					0.5%							4,000	4,000	
Contingency					1.5%							12,000	12,000	
					27.5%							228,000	217,000	
Subtotal (O = J+K+L+M+N)												498,000	475,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
B - On-Post Hazardous Waste Landfill Closure	A	2	30		0.13	25,000	/BCY-YR	1.000	1.000	1.000	1.000	108,000	56,000	
Subtotal (P)												4,000	108,000	56,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit					39.0%							42,000	22,000	
Contingency					30.0%							45,000	23,000	
Subtotal (S)												3,000	87,000	45,000
Subtotal (T = I+O+P+S)												7,000	1,250,000	1,107,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													1,760,000	1,610,000

[Note: Total O&M Annual Cost Only Includes Long-Term Activities]

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Table B3.3-B6 Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B6: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
B - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	250	BCY	1.000	1.000	1.000	1.000	2,000	2,000	2,000
B - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	250	BCY	1.000	1.000	1.000	1.000	1,000	1,000	1,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit													100	100
Engineering Design													1,000	1,000
Resident Engineering													100	100
Contingency													50	50
													1,000	1,000
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
B - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	25,000	BCY	1.000	1.000	1.000	1.000	404,000	404,000	395,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup													8,000	8,000
Engineering Design													41,000	40,000
Resident Engineering													41,000	40,000
Contingency													14,000	13,000
													152,000	149,000
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													686,000	649,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
B - Soil Excavation	LS	3	--	3.91	/BCY	25,000	BCY	1.000	1.000	1.000		112,000		101,000
B - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	25,000	BCY	1.000	2.500	1.000		78,000		68,000
B - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	250	BCY	1.000	1.000	1.000		400		400
B - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	250	BCY	1.000	1.000	1.000		300		300
B - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	250	BCY	1.000	1.000	1.000		1,000		1,000
B - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	25,000	BCY	1.000	1.000	1.000		37,000		33,000
B - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	25,000	BCY	1.000	2.500	1.000		81,000		58,000
B - Backfill with Treated Soil	LS	3	--	1.72	/BCY	25,000	BCY	1.000	1.000	1.000		48,000		45,000
B - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	25,000	SY	1.000	1.000	1.000		92,000		84,000
B - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	25,000	SY	1.000	1.000	1.100	Disturbance	6,000		5,000
Subtotal (I)												435,000		384,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (II)												17,000		15,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
B - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	25,000	BCY	1.000	1.000	1.000		1,402,000		1,271,000
Subtotal (II)												1,402,000		1,271,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (I)												0		0
TOTAL O&M COSTS (OPERATIONS) (OO = I+Q+II+O1)												3,025,000		2,744,000

BDD-R06:W01
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Table B3.3-B6 Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B6: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
B - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	250	BCY	1.000	1.000	1.000		40	1,000	1,000	
Subtotal (P)															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
COST CODE: LLSL															
Indirects, Overhead & Profit															
38.0%															
Contingency															
30.0%															
Subtotal (S = Q+R)															
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)															
													100	2,000	1,000
														3,690,000	3,390,000

BDD-B06.W01
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Table B3.3-B9
Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

Cost Item	Cost Type	Start Year	End Year	1997 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost								
DIRECT O&M COSTS (OPERATIONS)																						
B - Agricultural Practices	LS	1	--	0.20	/SY	25,000	SY	1.000	1.000	1.000			6,000	6,000								
B - Habitat Modification	A	1	3	0.17	/SY	25,000	SY	1.000	1.000	1.000			5,000	5,000								
INDIRECT O&M COSTS (OPERATIONS)																						
Mod/Demob													11,000	10,000								
Indirects, Overhead & Profit													300	300								
Engineering Design													4,000	4,000								
Resident Engineering													100	100								
Contingency													200	200								
Subtotal (I) = J+K+L+M													4,000	4,000								
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																						
B - Long Term Soil Monitoring, Ditches and Drainage Areas	A	4	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000		18,000	493,000	243,000								
B - Site Reviews	A	4	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	166,000	82,000								
B - Habitat Modification	A	4	30	0.01	/SY-YR	25,000	SY	1.000	1.000	1.000		200	4,000	2,000								
Subtotal (O) = J+K+L+M+N													9,000	9,000								
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																						
Indirects, Overhead & Profit													25,000	664,000								
Contingency													10,000	259,000								
Subtotal (S) = T+U+V+W+X													35,000	923,000								
Subtotal (P) = I+O+P+S													25,000	664,000								
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]																					327,000	609,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)																					1,220,000	609,000

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Table B4.1-1 Cost Estimate - Basin A Medium Group
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	280,000	SY	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	290,000	SY	1,000	1,000	1,000			0	0
A - No Action	LS	1	--	0.00	/SY	420,000	SY	1,000	1,000	1,000			0	0
U - No Action	LS	1	--	0.00	/SY	130,000	SY	1,000	1,000	1,000			0	0
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G) = B+C+D+E+F														
TOTAL CAPITAL COSTS (H = A+G)														
HBA-01.WQ1													0	0
SOILS DAA													0	0

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Table B4.1-1 Cost Estimate - Basin A Medium Group
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1992 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	290,000	SY	1.000	1.000	1.000		0	0	0
B - No Action	LS	1	--	0.00	/SY	290,000	SY	1.000	1.000	1.000		0	0	0
A - No Action	LS	1	--	0.00	/SY	420,000	SY	1.000	1.000	1.000		0	0	0
U - No Action	LS	1	--	0.00	/SY	130,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Basin A	A	1	30	116,000.00	/EA-YR	1	EA	1.000	1.000	1.000		132,000	3,971,000	2,105,000
HBAU - Site Reviews	A	1	30	3,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = H+O+P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal (T) = J+K+L+M+N														
Subtotal (P) = Q+R														
Subtotal (S)														
Subtotal (U) = H+T														

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Table B4.1-1a Cost Estimate - Basin A Medium Group
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume, No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
H - No Action (Limited)	LS	1	--	0.00	/SY	280,000	SY	1.000	1.000	1.000		0	0	0	0
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	46	BCY	1.000	1.000	1.000		300	300	300	300
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	46	BCY	1.000	1.000	1.000		200	200	200	200
B - No Action	LS	1	--	0.00	/SY	290,000	SY	1.000	1.000	1.000		0	0	0	0
Subtotal (A)															
COST CODE: LLSS															
Mod/Demob	3.3%	B = 0.033 * (A)													
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)													
Engineering Design	3.0%	D = 0.030 * (A+B+C)													
Resident Engineering	1.3%	E = 0.013 * (A+B+C)													
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)															
DIRECT SUBCONTRACT CAPITAL COSTS															
H - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	4,600	BCY	1.000	1.000	1.000		74,000	74,000	73,000	73,000
Subtotal (A1)															
COST CODE: C															
Mod/Demob	2.0%	B1 = 0.020 * (A1)													
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)															
TOTAL CAPITAL COSTS (H = A+G+A1+G1)															
Subtotal															
122,000															
48,000															

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Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume, No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost	Annual Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	17,000	SY	1,000	1,000	1,000		85,000		90,000
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	17,000	SY	1,000	1,000	1,000		16,000		16,000
H - No Action (Limited)	LS	1	--	0.00	/SY	280,000	SY	1,000	1,000	1,000		0		0
H - Soil Excavation	LS	3	--	3.91	/BCY	4,600	BCY	1,000	1,000	1,200	Odor Control	25,000		22,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	4,600	BCY	1,000	1,250	1,000		7,000		6,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	46	BCY	1,000	1,000	1,000		100		100
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	46	BCY	1,000	1,000	1,000		100		100
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	46	BCY	1,000	1,000	1,000		200		200
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	4,600	BCY	1,000	1,000	1,000		7,000		6,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	4,600	BCY	1,000	1,250	1,000		6,000		5,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	4,600	BCY	1,000	1,000	1,000		8,000		8,000
H - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	17,000	SY	1,000	1,000	1,100	Disturbance	63,000		57,000
H - Re-vegetation of Disturbed Areas	LS	3	--	0.18	/SY	17,000	SY	1,000	1,000	1,000		4,000		3,000
B - No Action	LS	1	--	0.00	/SY	290,000	SY	1,000	1,000	1,000		0		0
A - No Action	LS	1	--	0.00	/SY	420,000	SY	1,000	1,000	1,000		0		0
U - No Action	LS	1	--	0.00	/SY	130,000	SY	1,000	1,000	1,000		0		0
Subtotal (f)														
													231,000	215,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit	3.9%											8,000		8,000
Engineering Design	40.3%											97,000		90,000
Resident Engineering	0.5%											2,000		2,000
Contingency	1.5%											5,000		5,000
	27.5%											95,000		86,000
Subtotal (O = J+K+L+M+N)													207,000	192,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Saturated Soil)	LS	3	--	73.64	/BCY	4,600	BCY	1,000	1,000	1,000		367,000		351,000
Subtotal (f1)													367,000	351,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup	0.0%											0		0
Engineering Design	10.0%											36,000		35,000
Resident Engineering	0.0%											0		0
Contingency	2.0%											9,000		8,000
	40.0%											173,000		157,000
Subtotal (O1 = J1+K1+L1+M1+N1)													221,000	200,000
TOTAL O&M COSTS (OPERATIONS) (OO = f+f1+O1)													1,046,000	958,000

Table B4.1-1a
Cost Estimate - Basin A Medium Group
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	1992 (\$)			Units	Quantity	Units	Volume Mileage		Other Factor	1995 (\$)		1995 (\$)
	Cost Type	Start Year	End Year				Factor	Factor		Annual Cost	Total Cost	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)												
H - On/Off Hazardous Waste Landfill Closure (Particulates)	A	3	30	/BCY-YR	46	BCY	1,000	1,000	1,000	10	200	100
HB - Long Term Soil Monitoring, Brain A	A	3	30	/EA-YR	1	EA	1,000	1,000	1,000	132,000	3,707,000	1,978,000
HBAU - Site Reviews	A	3	30	/EA-YR	1	EA	1,000	1,000	1,000	8,000	173,000	87,000
Subtotal (P)												
139,000 3,879,000 1,986,000												
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)												
Indirects, Overhead & Profit	COST CODE: LLSL											
Contingency	Q = 0.390 * (P)											
	R = 0.300 * (P+Q)											
Subtotal (S = Q+R)												
54,000 1,513,000 787,000												
58,000 1,618,000 820,000												
Subtotal (T = P+S)												
112,000 3,131,000 1,586,000												
TOTAL O&M COSTS (LONG-TERM ACTIVITIES)												
250,000 7,010,000 3,552,000												
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)												
8,180,000 4,630,000												

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
H - Excavation Dewatering, Basin A	LS	1	--	281,046.00	/EA	EA	1.000	1.000	1.000				
HB - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	BCY	1.000	1.000	1.000				
HB - On-Post Hazardous Waste Landfill Closure	LS	4	--	3.80	/BCY	BCY	1.000	1.000	1.000				
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	BCY	1.000	1.000	1.000				
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	3.80	/BCY	BCY	1.000	1.000	1.000				
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	BCY	1.000	1.000	1.000				
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	4	--	3.70	/BCY	BCY	1.000	1.000	1.000				
Subtotal (A)												9,731,000	8,948,000
INDIRECT CAPITAL COSTS													
Mob/Demob													
Indirects, Overhead & Profit													
Engineering Design													
Resident Engineering													
Contingency													
Subtotal (G = B+C+D+E+F)												8,087,000	8,358,000
DIRECT SUBCONTRACT CAPITAL COSTS													
A - Incineration	A	1	2	36.37	/BCY	BCY	1.000	1.000	1.000				
Subtotal (A1)												28,000	28,000
INDIRECT SUBCONTRACT CAPITAL COSTS													
Mob/Demob													
Contractor Markup													
Engineering Design													
Resident Engineering													
Contingency													
Subtotal (G1 = B1+C1+D1+E1+F1)												18,000	18,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												16,898,000	17,351,000

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Table B4.1-3 **Cost Estimate - Basin A Medium Group**
Alternative 3: Landfill (On-Post Landfill)

Table B4.1-3 Cost Estimate - Basin A Medium Group
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	4	30	0.13	/BCY-YR	830,000	BCY	1.000	1.000	1.000		123,000	3,325,000	1,635,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/BCY-YR	7	BCY	1.000	1.000	1.000		1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	4	30	0.13	/BCY-YR	43,000	BCY	1.000	1.000	1.000		6,000	172,000	85,000
Subtotal (P)														
												130,000	3,487,000	1,720,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												51,000	1,364,000	671,000
Contingency												54,000	1,458,000	717,000
Subtotal (S = Q+R)												105,000	2,822,000	1,388,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												234,000	6,319,000	3,108,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													70,900,000	61,600,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														

Table B4.1-6
Cost Estimate - Basin A Medium Group
Alternative 6: Caps/Covers (Clay/Soil Cap)

[illegible]

Table B4.1-6f Cost Estimate - Basin A Medium Group
Alternative 6f: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992(\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	46	BCY	1.000	1.000	1.000			300	300		
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	46	BCY	1.000	1.000	1.000			200	200		
Subtotal (A)													500	500		
INDIRECT CAPITAL COSTS																
COST CODE: LLSS																
Mob/Demob	3.3%	B = 0.033 * (A)													20	20
Indirects, Overhead & Profit	36.0%	C = 0.360 * (A+B)													200	200
Engineering Design	3.0%	D = 0.030 * (A+B+C)													20	20
Resident Engineering	1.3%	E = 0.013 * (A+B+C)													10	10
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)													200	200
Subtotal (G = B+C+D+E+F)													400	400		
DIRECT SUBCONTRACT CAPITAL COSTS																
H - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	4,600	BCY	1.000	1.000	1.000			74,000	73,000		
Subtotal (A1)													74,000	73,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mob/Demob	2.0%	B1 = 0.020 * (A1)													1,000	1,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													8,000	7,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													8,000	7,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													3,000	2,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													26,000	27,000
Subtotal (G1 = B1+C1+D1+E1+F1)													47,000	48,000		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													122,000	120,000		

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Table B4.1-6f

Cost Estimate - Basin A Medium Group

Alternative 6f: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	LS	3	--	3.91 /BCY	/BCY	4,600	BCY	1.000	1.000	1.200	Odor Control	25,000	7,000	22,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07 /BCY-MILE	/BCY-MILE	4,600	BCY	1.000	1.250	1.000		7,000	100	6,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55 /BCY	/BCY	46	BCY	1.000	1.000	1.000		100	100	100
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07 /BCY-MILE	/BCY-MILE	46	BCY	1.000	1.000	1.000		100	100	100
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07 /BCY	/BCY	46	BCY	1.000	1.000	1.000		200	200	200
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28 /BCY	/BCY	4,600	BCY	1.000	1.000	1.000		7,000	7,000	6,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86 /BCY-MILE	/BCY-MILE	4,600	BCY	1.000	1.250	1.000		6,000	6,000	5,000
H - Backfill with Treated Soil	LS	3	--	1.72 /BCY	/BCY	4,600	BCY	1.000	1.000	1.000		8,000	8,000	8,000
HBAU - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06 /SY	/SY	560,000	SY	1.000	1.000	1.000		36,000	36,000	37,000
HBAU - Installation of Clay/Soil Cap	A	3	4	23.30 /SY	/SY	560,000	SY	1.000	1.000	1.000		14,880,000	14,880,000	13,164,000
HBAU - Revegetation of Disturbed Areas	A	3	4	0.18 /SY	/SY	560,000	SY	1.000	1.000	1.100	Disturbance	127,000	127,000	112,000
A - Drilling and Agrmt Screening Prior to Excavation	LS	2	--	4.89 /SY	/SY	17,000	SY	1.000	1.000	1.000		85,000	85,000	90,000
U - UXO Clearance In Surface Soil by Geophysics	LS	2	--	0.24 /SY	/SY	130,000	SY	1.000	1.000	1.000		36,000	36,000	34,000
Subtotal (I)														
													15,238,000	13,505,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	COST CODE: MLLS													
Indirects, Overhead & Profit	J = 0.038 * (I)													
Engineering Design	K = 0.378 * (I+J)													
Resident Engineering	L = 0.005 * (I+J+K)													
Contingency	M = 0.015 * (I+J+K)													
	N = 0.275 * (I+J+K+L+M)													
Subtotal (I)													590,000	523,000
													5,978,000	5,286,000
													109,000	97,000
													327,000	290,000
													6,116,000	5,421,000
Subtotal (I)													13,118,000	11,628,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Saturated Soil)	LS	3	--	73.64 /BCY	/BCY	4,600	BCY	1.000	1.000	1.000		367,000	367,000	351,000
Subtotal (II)													367,000	351,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob	COST CODE: D													
Contractor Markup	J1 = 0.000 * (II)													
Engineering Design	K1 = 0.100 * (II+J1)													
Resident Engineering	L1 = 0.000 * (II+J1+K1)													
Contingency	M1 = 0.020 * (II+J1+K1)													
	N1 = 0.400 * (II+J1+K1+L1+M1)													
Subtotal (O1 = J1+K1+L1+M1+N1)													0	0
													36,000	35,000
													0	0
													9,000	8,000
													173,000	157,000
Subtotal (O1 = J1+K1+L1+M1+N1)													221,000	200,000
													28,964,000	25,682,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+II+O1)														

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Table B4.1-6f Cost Estimate - Basin A Medium Group
Alternative 6f: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	46	BCY	1.000	1.000	1.000		10	200	100
HBAU - Installation of Clay/Soil Cap	A	3	30	0.80	/SY-YR	560,000	SY	1.000	1.000	1.000		511,000	14,315,000	7,254,000
HBAU - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (P)													517,000	14,488,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit													202,000	5,650,000
Contingency													216,000	6,041,000
Subtotal (S = Q+R)													418,000	11,691,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													935,000	26,179,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													55,300,000	39,100,000

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Table B4.1-8 Cost Estimate - Basin A Medium Group
Alternative 8: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Basin A	LS	1	--	281,046.00	/EA	1	EA	1.000	1.000	1.000			321,000	321,000
A - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	700	BCY	1.000	1.000	1.000			5,000	4,000
A - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	700	BCY	1.000	1.000	1.000			3,000	3,000
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	43,000	BCY	1.000	1.000	1.000			212,000	202,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	43,000	BCY	1.000	1.000	1.000			182,000	186,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: LMSS														
Mob/Demob				3.9%										
Indirects, Overhead & Profit				39.0%										
Engineering Design				4.5%										
Resident Engineering				1.5%										
Contingency				27.5%										
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	700	BCY	1.000	1.000	1.000			3,000	3,000
HB - Solvent Washing	A	1	2	28.55	/BCY	820,000	BCY	1.000	1.000	1.000			28,716,000	28,080,000
A - Solvent/Caustic Washing of Agent Soil	A	1	2	32.55	/BCY	700	BCY	1.000	1.000	1.000			28,000	25,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: F														
Mob/Demob				5.0%										
Contractor Markup				10.0%										
Engineering Design				4.5%										
Resident Engineering				2.0%										
Contingency				30.0%										
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													16,023,000	15,641,000
													44,176,000	43,104,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Excavation Dewatering Basin A	A	1	5	743,278.00	/EA-YR	1	EA	1.00	1.00	1.00		4,241,000			3,858,000
HB - Soil Excavation	A	3	5	3.91	/BCY	830,000	BCY	1.00	1.00	1.200		4,444,000			3,842,000
HB - Transportation of Contaminated Soil to Soil Washing Unit	A	3	5	1.07	/BCY-MILE	830,000	BCY	1.00	1.250	1.000		1,287,000			1,095,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	1.28	/BCY	820,000	BCY	1.00	1.250	1.000		1,487,000			1,294,000
HB - Transportation of Treated Soil to Backfill Excavation	A	3	5	0.86	/BCY-MILE	820,000	BCY	1.00	1.250	1.000		1,008,000			870,000
HB - Backfill with Treated Soil	A	3	5	1.72	/BCY	820,000	BCY	1.00	1.000	1.000		1,610,000			1,391,000
HB - Installation of 6 Inches of Topsoil	A	3	5	3.24	/SY	560,000	SY	1.00	1.000	1.000		2,071,000			1,790,000
HB - Revegetation of Disturbed Areas	A	3	5	0.18	/SY	560,000	SY	1.00	1.000	1.100	Disturbance	127,000			109,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	420,000	SY	1.00	1.000	1.000		2,344,000			2,232,000
A - Excavation of Soil with Agent	LS	3	--	4.53	/BCY	700	BCY	1.00	1.000	1.200	Odor Control	4,000			4,000
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	3	--	1.07	/BCY-MILE	700	BCY	1.00	1.250	1.000		1,000			1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	700	BCY	1.00	1.250	1.000		2,000			1,000
A - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	700	BCY	1.00	1.250	1.000		1,000			1,000
A - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	700	BCY	1.00	1.250	1.000		4,000			4,000
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	130,000	SY	1.00	1.250	1.000		158,000			150,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	90	BCY	1.00	1.250	1.000		9,000			8,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	43,000	BCY	1.00	1.250	1.300	Productivity	312,000			283,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	43,000	BCY	1.00	1.250	1.300	Productivity	57,000			51,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	43,000	BCY	1.00	1.250	1.000		250,000			228,000
Subtotal (f)												19,402,000	17,210,000		
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob															
Indirects, Overhead & Profit				5.1%	J = 0.051 * (f)							894,000			882,000
Engineering Design				1.5%	K = 0.380 * (f+J)							7,956,000			7,056,000
Resident Engineering				2.3%	L = 0.015 * (f+J+K)							425,000			377,000
Contingency				32.5%	M = 0.025 * (f+J+K)							638,000			566,000
					N = 0.325 * (f+J+K+L+M)							9,560,000			8,480,000
Subtotal (O = J+K+L+M+N)												19,572,000	17,381,000		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
HB - Solvent Washing	A	3	5	118.53	/BCY	820,000	BCY	1.00	1.000	1.000		110,915,000			95,889,000
H - Cement-Based Solidification	LS	3	--	70.10	/BCY	700	BCY	1.00	1.000	1.000		56,000			51,000
A - Solvent/Caustic Washing of Agent Soil	LS	3	--	248.53	/BCY	700	BCY	1.00	1.000	1.000		199,000			180,000
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	90	BCY	1.00	1.000	1.000		205,000			180,000
Subtotal (f)												111,386,000	98,325,000		
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)															
Mod/Demob															
Contractor Markup				5.0%	J1 = 0.050 * (f)							5,570,000			4,818,000
Engineering Design				10.0%	K1 = 0.100 * (f+J1)							11,887,000			10,114,000
Resident Engineering				0.0%	L1 = 0.000 * (f+J1+K1)							0			0
Contingency				2.0%	M1 = 0.020 * (f+J1+K1)							2,573,000			2,225,000
				30.0%	N1 = 0.300 * (f+J1+K1+L1+M1)							39,371,000			34,044,000
Subtotal (O1 = J1+K1+L1+M1+N1)												59,210,000	51,199,000		
TOTAL O&M COSTS (OPERATIONS) (OO = f+O1+O)												209,590,000	182,095,000		
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Table B4.1-8 Cost Estimate - Basin A Medium Group
Alternative 8: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Monitoring of Solidified Soil	A	3	30	0.25	/SY-YR	3,000	SY	1.000	1.000	1.000		1,000	24,000	12,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	700	BCY	1.000	1.000	1.000		100	3,000	1,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	43,000	BCY	1.000	1.000	1.000		6,000	179,000	91,000
Subtotal (P)												14,000	378,000	192,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												5,000	147,000	75,000
Contingency												6,000	158,000	80,000
Subtotal (S = Q+R)												11,000	305,000	155,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												24,000	683,000	346,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)												254,000,000		

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Table B4.1-13 Cost Estimate - Basin A Medium Group
Alternative 13: Direct Thermal Desorption (Direct Heating): Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation/Decontamination, Basin A														
HB - Soil Excavation	A	1	5	743,278.00	/EA-YR	1	EA	1.000	1.000	1.000		4,241,000	3,856,000	3,856,000
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	5	3.91	/BCY	830,000	BCY	1.000	1.000	1.200	Odor Control	4,444,000	3,842,000	3,842,000
HB - Load Treated Soil for Transport to Hazardous Landfill	A	3	5	1.07	/BCY-MILE	830,000	BCY	1.000	1.250	1.000		1,287,000	1,095,000	1,095,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	5	1.55	/BCY	8,200	BCY	1.000	1.000	1.000		15,000	13,000	13,000
HB - On-Post Hazardous Waste Landfill (Particulates)	A	3	5	1.07	/BCY-MILE	8,200	BCY	1.000	1.000	1.000		10,000	8,000	8,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	4.07	/BCY	8,200	BCY	1.000	1.000	1.000		38,000	33,000	33,000
HB - Transportation of Treated Soil to Backfill Excavation	A	3	5	1.28	/BCY	820,000	BCY	1.000	1.250	1.000		1,497,000	1,294,000	1,294,000
HB - Backfill with Treated Soil	A	3	5	0.86	/BCY-MILE	820,000	BCY	1.000	1.250	1.000		1,006,000	870,000	870,000
HB - Installation of 6 Inches of Topsoil	A	3	5	1.72	/BCY	820,000	BCY	1.000	1.000	1.000		1,810,000	1,391,000	1,391,000
HB - Revegetation of Disturbed Areas	A	3	5	3.24	/SY	560,000	SY	1.000	1.000	1.000	Disturbance	2,071,000	1,790,000	1,790,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	0.18	/SY	420,000	SY	1.000	1.000	1.000		127,000	108,000	108,000
A - Excavation of Soil with Agent	LS	3	--	4.89	/BCY	700	BCY	1.000	1.000	1.200	Odor Control	2,344,000	2,232,000	2,232,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	4.55	/BCY	700	BCY	1.000	1.250	1.000		4,000	4,000	4,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.07	/BCY-MILE	7	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.55	/BCY	7	BCY	1.000	1.000	1.000		10	10	10
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	1.07	/BCY-MILE	7	BCY	1.000	1.000	1.000		10	10	10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	4.07	/BCY	700	BCY	1.000	1.250	1.000		30	30	30
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	1.28	/BCY	700	BCY	1.000	1.250	1.000		1,000	1,000	1,000
A - Backfill with Treated Soil	LS	3	--	0.86	/BCY-MILE	700	BCY	1.000	1.000	1.000		1,000	1,000	1,000
U - UXO Clearance by Geophysics	LS	2	--	1.72	/BCY	130,000	SY	1.000	1.000	1.000		128,000	120,000	120,000
U - Removal of Soil with UXO	LS	3	--	0.85	/SY	90	BCY	1.000	1.000	1.000		7,000	7,000	7,000
U - Excavation of Debris from Surface Soil	LS	3	--	70.57	/BCY	43,000	BCY	1.000	1.000	1.300	Productivity	249,000	228,000	228,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	3.91	/BCY	43,000	BCY	1.000	1.000	1.000		57,000	51,000	51,000
U - On-Post Solid Waste Landfill	LS	3	--	0.71	/BCY-MILE	43,000	BCY	1.000	1.250	1.300	Productivity	200,000	181,000	181,000
				Subtotal (I)										
				19,316,000										
INDIRECT O&M COSTS (OPERATIONS)														
				COST CODE: HMLM										
				Mob/Demob										
				5.1% J = 0.051 * (I)										
				Indirects, Overhead & Profit										
				38.0% K = 0.380 * (I+J)										
				Engineering Design										
				1.5% L = 0.015 * (I+J+K)										
				Resident Engineering										
				2.3% M = 0.023 * (I+J+K)										
				Contingency										
				32.5% N = 0.325 * (I+J+K+L+M)										
				Subtotal (O = J+K+L+M+N)										
				19,485,000										
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
				COST CODE: D										
				H - Cement-Based Solidification										
				HB - Thermal Desorption (Saturated Soil)										
				LS 3 -- 70.10 /BCY										
				A - Incineration										
				LS 3 -- 73.64 /BCY										
				U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facili										
				LS 3 -- 96.24 /BCY										
				Subtotal (I1)										
				2,200.00 /BCY										
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
				COST CODE: D										
				Mob/Demob										
				0.0% J1 = 0.000 * (I1)										
				Contractor Markup										
				10.0% K1 = 0.100 * (I1+J1)										
				Engineering Design										
				0.0% L1 = 0.000 * (I1+J1+K1)										
				Resident Engineering										
				2.0% M1 = 0.020 * (I1+J1+K1)										
				Contingency										
				40.0% N1 = 0.400 * (I1+J1+K1+L1+M1)										
				Subtotal (O1 = J1+K1+L1+M1+N1)										
				69,268,000										
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)														
				59,859,000										
				0										
				6,927,000										
				0										
				1,524,000										
				31,087,000										
				26,863,000										
				39,536,000										
				34,190,000										
				147,807,000										
				128,485,000										

Table B4.1-13

Cost Estimate - Basin A Medium Group

Alternative 13: Direct Thermal Desorption (Direct Heating): Direct Solidification/Stabilization (Cement-Based Solidification)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	5	30	0.13	/BCY-YR	8,200	BCY	1,000	1,000	1,000		1,000	32,000	15,000
H - Long Term Monitoring of Solidified Soil	A	3	30	0.25	/SY-YR	3,000	SY	1,000	1,000	1,000		1,000	24,000	12,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	7	BCY	1,000	1,000	1,000		1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	43,000	BCY	1,000	1,000	1,000		6,000	178,000	91,000
Subtotal (P)												15,000	407,000	205,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												6,000	159,000	80,000
Contingency												6,000	170,000	86,000
Subtotal (S = Q+P)												12,000	328,000	166,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												28,000	735,000	371,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													172,000,000	132,000,000

HBA-13.WQ1
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Table B4.1-17 Cost Estimate - Basin A Medium Group
Alternative 17: In Situ Physical/Chemical Treatment (Soil Flushing); In Situ Thermal Treatment (Surface Soil Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost	PW Cost	
DIRECT CAPITAL COSTS														
H - In Situ Soil Flushing	LS	17	-	8,113,000.00	/EA	1	EA	1.000	1.000	1.000		9,258,000	4,241,000	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	-	5.72	/BCY	7	BCY	1.000	1.000	1.000		50	40	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	-	3.80	/BCY	7	BCY	1.000	1.000	1.000		30	30	
U - On-Post Solid Waste Landfill	LS	2	-	4.32	/BCY	43,000	BCY	1.000	1.000	1.000		212,000	202,000	
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	-	3.70	/BCY	43,000	BCY	1.000	1.000	1.000		162,000	165,000	
Subtotal (A)												9,652,000	4,608,000	
INDIRECT CAPITAL COSTS														
COST CODE: UMMS														
Mob/Demob				3.9%	B = 0.039 * (A)							374,000	178,000	
Indirects, Overhead & Profit				37.8%	C = 0.378 * (A+B)							3,785,000	1,807,000	
Engineering Design				4.5%	D = 0.045 * (A+B+C)							821,000	297,000	
Resident Engineering				1.5%	E = 0.015 * (A+B+C)							207,000	96,000	
Contingency				27.5%	F = 0.275 * (A+B+C+D+E)							4,026,000	1,922,000	
Subtotal (G = B+C+D+E+F)												9,013,000	4,303,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
HR - In Situ Surface Soil Heating	LS	1	-	951,200.00	/UNIT	2	UNITS	1.000	1.000	1.000		2,171,000	2,171,000	
A - Incineration	A	1	2	36.37	/BCY	700	BCY	1.000	1.000	1.000		28,000	28,000	
Subtotal (A1)												2,200,000	2,199,000	
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: H														
Mob/Demob				0.0%	B1 = 0.000 * (A1)							0	0	
Contractor Markup				7.0%	C1 = 0.070 * (A1+B1)							154,000	154,000	
Engineering Design				0.0%	D1 = 0.000 * (A1+B1+C1)							0	0	
Resident Engineering				2.0%	E1 = 0.020 * (A1+B1+C1)							47,000	47,000	
Contingency				40.0%	F1 = 0.400 * (A1+B1+C1+D1+E1)							960,000	960,000	
Subtotal (G1 = B1+C1+D1+E1+F1)												1,162,000	1,161,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												22,027,000	12,271,000	

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Table B4.1-17 Cost Estimate - Basin A Medium Group
Alternative 17: In Situ Physical/Chemical Treatment (Soil Flushing): In Situ Thermal Treatment (Surface Soil Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost				Factor				Total Cost	PW Cost	
DIRECT O&M COSTS (OPERATIONS)														
H - In Situ Soil Flushing	A	18	27	83.45	/BCY-YR	330,000	BCY	1,000	1,000	1,000		314,280,000	111,167,000	
HB - Installation of 6 Inches of Topsoil	A	1	17	3.24	/SY	570,000	SY	1,000	1,000	1,000		2,108,000	1,488,000	
HB - Revegetation of Disturbed Areas	A	1	17	0.18	/SY	570,000	SY	1,000	1,000	1,100	Disturbance	129,000	90,000	
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	420,000	SY	1,000	1,000	1,000		2,344,000	2,128,000	
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	700	BCY	1,000	1,000	1,200	Odor Control	4,000	4,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	700	BCY	1,000	1,250	1,000		1,000	1,000	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	7	BCY	1,000	1,000	1,000		10	10	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	7	BCY	1,000	1,000	1,000		10	10	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	7	BCY	1,000	1,000	1,000		30	30	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	700	BCY	1,000	1,000	1,000		1,000	1,000	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	700	BCY	1,000	1,250	1,000		1,000	1,000	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	700	BCY	1,000	1,000	1,000		1,000	1,000	
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	130,000	SY	1,000	1,000	1,000		128,000	120,000	
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	90	BCY	1,000	1,000	1,000		7,000	7,000	
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	43,000	BCY	1,000	1,000	1,300	Productivity	248,000	228,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	43,000	BCY	1,000	1,000	1,300	Productivity	45,000	41,000	
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	43,000	BCY	1,000	1,000	1,000		200,000	181,000	
Subtotal (I)												319,477,000	115,433,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				4.5%	J = 0.045 * (I)							14,378,000	5,184,000	
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)							134,378,000	48,953,000	
Engineering Design				1.5%	L = 0.015 * (I+J+K)							7,023,000	2,538,000	
Resident Engineering				2.3%	M = 0.023 * (I+J+K)							10,535,000	3,807,000	
Contingency				32.5%	N = 0.325 * (I+J+K+L+M)							157,881,000	57,045,000	
Subtotal (O = J+K+L+M+N)												324,192,000	117,137,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - In Situ Surface Soil Heating	A	1	17	27.30	/SY	570,000	SY	1,000	1,000	1,000		17,758,000	12,385,000	
A - Incineration	LS	3	--	96.24	/BCY	700	BCY	1,000	1,000	1,000		77,000	70,000	
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	90	BCY	1,000	1,000	1,000		228,000	205,000	
Subtotal (I1)												18,081,000	12,640,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.2%	J1 = 0.002 * (I1)							34,000	24,000	
Contractor Markup				6.0%	K1 = 0.060 * (I1+J1)							1,086,000	760,000	
Engineering Design				0.1%	L1 = 0.001 * (I1+J1+K1)							10,000	7,000	
Resident Engineering				0.6%	M1 = 0.006 * (I1+J1+K1)							115,000	81,000	
Contingency				30.5%	N1 = 0.305 * (I1+J1+K1+L1+M1)							5,888,000	4,121,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												7,133,000	4,992,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												668,852,000	250,202,000	

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Table BA.1.1-17 Cost Estimate - Basin A Medium Group
Alternative 17: In Situ Physical/Chemical Treatment (Soil Flushing); In Situ Thermal Treatment (Surface Soil Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - No Action	A	27	30	0.00	SV	570,000	1.000	1.000	1.000		0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	7	1.000	1.000	1.000		1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	43,000	1.000	1.000	1.000		6,000	179,000	91,000
Subtotal (P)											6,000	179,000	91,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit											2,000	70,000	35,000
Contingency											3,000	74,000	38,000
Subtotal (S = Q+R)											5,000	144,000	73,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											12,000	323,000	164,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													
												691,000,000	263,000,000

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Table B4.1-19

Cost Estimate - Basin A Medium Group

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Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating): In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
H - Excavation Dewatering, Basin A	LS	1	--	281,046.00	/EA	1	EA	1.000	1.000	1.000		321,000			321,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	7	BCY	1.000	1.000	1.000		50			40
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	7	BCY	1.000	1.000	1.000		30			30
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	43,000	BCY	1.000	1.000	1.000		212,000			202,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	43,000	BCY	1.000	1.000	1.000		162,000			166,000
Subtotal (A)												714,000			687,000
INDIRECT CAPITAL COSTS															
COST CODE: MNSS															
Mob/Demob	4.5%	B = 0.045 * (A)													
Indirects, Overhead & Profit	40.3%	C = 0.403 * (A+B)													
Engineering Design	4.5%	D = 0.045 * (A+B+C)													
Resident Engineering	1.8%	E = 0.018 * (A+B+C)													
Contingency	28.6%	F = 0.286 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)												718,000			691,000
DIRECT SUBCONTRACT CAPITAL COSTS															
HB - In Situ RF/Microwave Heating - Deep/Saturated	LS	1	--	7,066,000.00	/UNIT	1	UNITS	1.000	1.000	1.000		8,063,000			8,063,000
A - Incineration	A	1	2	36.37	/BCY	700	BCY	1.000	1.000	1.000		28,000			28,000
Subtotal (A1)												8,083,000			8,083,000
INDIRECT SUBCONTRACT CAPITAL COSTS															
COST CODE: K															
Mob/Demob	2.0%	B1 = 0.020 * (A1)													
Contractor Markup	6.0%	C1 = 0.060 * (A1+B1)													
Engineering Design	12.0%	D1 = 0.120 * (A1+B1+C1)													
Resident Engineering	1.5%	E1 = 0.015 * (A1+B1+C1)													
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)												4,818,000			4,817,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												14,342,000			14,287,000

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Table B4.1-19 Cost Estimate - Basin A Medium Group
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating): In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation Decontaminating Basin A	LS	1	20	/EA-YR	1	EA	1.000	1.000	1.000		18,984,000	11,089,000		
H - Soil Cover for Solidified Materials	LS	3	--	/SY	3,000	SY	1.000	1.000	1.000		31,000	28,000		
HB - Installation of 6 Inches of Topsoil	A	1	20	/SY	560,000	SY	1.000	1.000	1.000		2,071,000	1,955,000		
HB - Revegetation of Disturbed Areas	A	1	20	/SY	560,000	SY	1.000	1.000	1.000	Disturbance	127,000	83,000		
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	/SY	420,000	SY	1.000	1.000	1.000		2,344,000	2,232,000		
A - Excavation of Soil with Agent	LS	3	--	/BCY	700	BCY	1.000	1.000	1.000	Odor Control	4,000	4,000		
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	/BCY-MILE	700	BCY	1.000	1.250	1.000		1,000	1,000		
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	/BCY	7	BCY	1.000	1.000	1.000		10	10		
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	/BCY-MILE	7	BCY	1.000	1.000	1.000		10	10		
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	/BCY	7	BCY	1.000	1.000	1.000		30	30		
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	/BCY	700	BCY	1.000	1.000	1.000		1,000	1,000		
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	/BCY-MILE	700	BCY	1.000	1.250	1.000		1,000	1,000		
A - Backfill with Treated Soil	LS	3	--	/BCY	700	BCY	1.000	1.000	1.000		1,000	1,000		
U - UXO Clearance by Geophysics	LS	2	--	/SY	130,000	SY	1.000	1.000	1.000		128,000	120,000		
U - Removal of Soil with UXO	LS	3	--	/BCY	90	BCY	1.000	1.000	1.000		7,000	7,000		
U - Excavation of Debris from Surface Soil	LS	3	--	/BCY	43,000	BCY	1.000	1.000	1.300	Productivity	249,000	228,000		
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	/BCY-MILE	43,000	BCY	1.000	1.250	1.300	Productivity	57,000	51,000		
U - On-Post Solid Waste Landfill	LS	3	--	/BCY	43,000	BCY	1.000	1.000	1.000		200,000	181,000		
Subtotal (I)											22,194,000	15,390,000		
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit											1,137,000	789,000		
Engineering Design											9,387,000	6,512,000		
Resident Engineering											481,000	340,000		
Contingency											818,000	567,000		
Subtotal (O = J+K+L+M+N)											11,908,000	8,260,000		
Subtotal (I)											23,737,000	16,469,000		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - In Situ RF/Microwave Heating - Deep/Saturated	A	1	20	/BCY	820,000	BCY	1.000	1.000	1.000		214,672,000	140,452,000		
H - In Situ Cement-Based Solidification	LS	3	--	/BCY	700	BCY	1.000	1.000	1.000		48,000	44,000		
A - Incineration	LS	3	--	/BCY	700	BCY	1.000	1.000	1.000		77,000	70,000		
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	/BCY	90	BCY	1.000	1.000	1.000		228,000	205,000		
Subtotal (I)											215,023,000	140,771,000		
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup											0	0		
Engineering Design											12,901,000	8,446,000		
Resident Engineering											1,140,000	746,000		
Contingency											2,279,000	1,492,000		
Subtotal (O = J+K+L+M+N)											92,537,000	60,582,000		
Subtotal (I)											108,857,000	71,287,000		
Subtotal (O = J+K+L+M+N)											369,802,000	243,896,000		
TOTAL O&M COSTS (OPERATIONS) (OO = IO+OI+OI)														

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Table BA.1-19 Cost Estimate - Basin A Medium Group
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
H - Long Term Monitoring of In Situ Solidified Soil	A	3	30	0.25	/SY-YR	3,000	1.000	1.000	1.000		1,000	24,000	12,000
HB - Site Reviews	A	20	30	5,400.00	/EA-YR	1	1.000	1.000	1.000		6,000	66,000	21,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	7	1.000	1.000	1.000		1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	43,000	1.000	1.000	1.000		6,000	178,000	91,000
Subtotal (P)											13,000	270,000	124,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit											5,000	105,000	46,000
Contingency											6,000	113,000	52,000
Subtotal (S = Q+R)											11,000	218,000	100,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											24,000	488,000	224,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OQ+T)													
												385,000,000	258,000,000

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Table B4.2-1 Cost Estimate - Basin F Wastepile Medium Group
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Modification to Existing Pump	LS	1	--	9,440.00	/EA	1	EA	1.000	1.000	1.000		11,000	11,000	11,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Treatment and Disposal of Wastepile Leachate	A	1	30	18.00	/GAL	50,000	GAL/YR	1.000	1.000	1.000		1,027,000	30,811,000	16,328,000
H - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		8,000	185,000	98,000
H - Maintenance of Existing Soil Cover	A	1	30	0.33	/SY-YR	75,000	SY	1.000	1.000	1.000		28,000	847,000	449,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												1,061,000	31,844,000	16,875,000
												414,000	12,419,000	6,581,000
												443,000	13,279,000	7,037,000
												857,000	25,698,000	13,618,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												1,918,000	57,562,000	30,514,000
												57,600,000	30,500,000	30,500,000
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Public Education														
	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000		2,000	2,000	2,000
												2,000	2,000	
INDIRECT CAPITAL COSTS														
Mod/Demab													100	100
Indirects, Overhead & Profit													1,000	1,000
Engineering Design													100	100
Resident Engineering													30	30
Contingency													1,000	1,000
												2,000	2,000	2,000
TOTAL CAPITAL COSTS (H = A+G)														
												2,000	2,000	3,000

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Table B4.2-2 Cost Estimate - Basin F Wastepile Medium Group
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
H - Habitat Modification	A	1	3	0.17	/SY	75,000	SY	1.000	1.000	1.000			14,000	14,000
H - Modification to Existing Sump	LS	1	-	9,400.00	/EA	1	EA	1.000	1.000	1.000			11,000	11,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
COST CODE														
J = 0.033 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.013 * (I+J+K)														
N = 0.263 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Fences	A	1	30	0.75	/LF-YR	3,700	LF	1.000	1.000	1.000		3,000	95,000	50,000
H - Habitat Modification	A	3	30	0.01	/SY-YR	75,000	SY	1.000	1.000	1.000		500	14,000	7,000
H - Treatment and Disposal of Wastepile Leachate	A	1	30	18.00	/GAL	50,000	GAL/YR	1.000	1.000	1.000		1,027,000	30,811,000	16,328,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
H - Maintenance of Existing Soil Cover	A	3	30	0.33	/SY-YR	75,000	SY	1.000	1.000	1.000		28,000	791,000	401,000
Subtotal (P = J+K+L+M+N)														
COST CODE														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal (U)														
1,085,000														
31,884,000														
16,874,000														
415,000														
12,435,000														
6,581,000														
444,000														
13,285,000														
7,036,000														
880,000														
25,730,000														
13,617,000														
1,925,000														
57,692,000														
30,553,000														
57,700,000														
30,600,000														

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Table B4.2-6e Cost Estimate - Basin F Wastepile Medium Group
Alternative 6e: Caps/Covers (Composite Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	75,000	SY	1.000	1.000	1.000			5,000	5,000
H - Installation of Composite Cap	LS	1	--	36.04	/SY	75,000	SY	1.000	1.000	1.000			3,065,000	3,065,000
H - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	75,000	SY	1.000	1.000	1.100	Disturbance		17,000	17,000
H - Modification to Existing Sump	LS	1	--	9,440.00	/EA	1	EA	1.000	1.000	1.000			11,000	11,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				3.3%									3,117,000	3,117,000
Indirects, Overhead & Profit				37.8%									101,000	101,000
Engineering Design				0.5%									1,215,000	1,215,000
Resident Engineering				1.3%									22,000	22,000
Contingency				26.3%									55,000	55,000
													1,184,000	1,184,000
													2,578,000	2,578,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Installation of Composite Cap	A	1	30	1.23	/SY-YR	75,000	SY	1.000	1.000	1.000		105,000	3,158,000	1,874,000
H - Treatment and Disposal of Wastepile Leachate	A	1	30	18.00	/GAL	550	GAL/YR	1.000	1.000	1.000		11,000	336,000	180,000
H - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit				39.0%									123,000	3,682,000
Contingency				30.0%									48,000	1,438,000
													51,000	1,535,000
													98,000	1,575,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												222,000	12,349,000	9,222,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												12,300,000	9,220,000	
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Table B4.2-8a Cost Estimate - Basin F Wastepile Medium Group
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Wastepile Excavation Including Vapor Controls	LS	1	--	34,521,250.00	/EA	1	EA	1.000	1.000	1.000			38,387,000	38,387,000
Subtotal (A)													38,387,000	38,387,000
INDIRECT CAPITAL COSTS														
COST CODE: LMMSSO														
Mob/Demob	0.0%												0	0
Indirects, Overhead & Profit	37.8%												14,872,000	14,872,000
Engineering Design	3.0%												1,628,000	1,628,000
Resident Engineering	1.5%												814,000	814,000
Contingency	27.5%												15,586,000	15,586,000
Subtotal (G = B+C+D+E+F)													32,910,000	32,910,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Solvent Washing	LS	1	--	28.55	/BCY	600,000	BCY	1.000	1.000	1.000			19,548,000	19,548,000
Subtotal (A1)													19,548,000	19,548,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: F														
Mob/Demob	5.0%												977,000	977,000
Contractor Markup	10.0%												2,053,000	2,053,000
Engineering Design	4.5%												1,016,000	1,016,000
Resident Engineering	2.0%												452,000	452,000
Contingency	30.0%												7,214,000	7,214,000
Subtotal (G1 = B1+C1+D1+E1+F1)													11,711,000	11,711,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													103,586,000	103,586,000

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Table B4.2-8a Cost Estimate - Basin F Wastepile Medium Group
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Wastepile Overburden	LS	1	-	1.89	/BCY	75,000	BCY	1.000	1.000	1.000		182,000	182,000	182,000
H - Wastepile Excavation Including Vapor Controls	A	1	2	21.53	/BCY	600,000	BCY	1.000	1.000	1.000		14,742,000	14,742,000	14,391,000
H - Transportation of Contaminated Soil to Soil Washing Unit	A	1	2	1.07	/BCY-MILE	600,000	BCY	1.000	1.000	1.000		733,000	733,000	715,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	1	2	1.28	/BCY	600,000	BCY	1.000	1.000	1.000		878,000	878,000	866,000
H - Transportation of Treated Soil to Backfill Excavation	A	1	2	0.86	/BCY-MILE	600,000	BCY	1.000	1.000	1.000		589,000	589,000	575,000
H - Backfill with Treated Soil	A	1	2	1.72	/BCY	600,000	BCY	1.000	1.000	1.000		1,178,000	1,178,000	1,150,000
H - Backfill of Wastepile Overburden	A	1	2	0.18	/SY	75,000	SY	1.000	1.000	1.000		147,000	147,000	144,000
H - Revegetation of Disturbed Areas	A	1	2	0.18	/SY	75,000	SY	1.000	1.000	1.000		15,000	15,000	15,000
Subtotal (I)												18,442,000	18,442,000	18,008,000
INDIRECT O&M COSTS (OPERATIONS)														
COST CODE: HLLS														
Mobile/Demob	4.5%	$J = 0.045 * (I)$												
Indirects, Overhead & Profit	30.0%	$K = 0.300 * (I+J)$												
Engineering Design	0.5%	$L = 0.005 * (I+J+K)$												
Resident Engineering	1.8%	$M = 0.018 * (I+J+K)$												
Contingency	30.0%	$N = 0.300 * (I+J+K+L+M)$												
Subtotal (O) = J+K+L+M+N												830,000	830,000	810,000
												7,516,000	7,516,000	7,336,000
												134,000	134,000	131,000
												469,000	469,000	458,000
												8,217,000	8,217,000	8,023,000
Subtotal (O) = J+K+L+M+N												17,165,000	17,165,000	16,780,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Solvent Washing	A	1	2	118.33	/BCY	600,000	BCY	1.000	1.000	1.000		81,157,000	81,157,000	79,225,000
Subtotal (I1)												81,157,000	81,157,000	79,225,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
COST CODE: F														
Mobile/Demob	5.0%	$J1 = 0.050 * (I1)$												
Contractor Markup	10.0%	$K1 = 0.100 * (I1+J1)$												
Engineering Design	0.0%	$L1 = 0.000 * (I1+J1+K1)$												
Resident Engineering	2.0%	$M1 = 0.020 * (I1+J1+K1)$												
Contingency	30.0%	$N1 = 0.300 * (I1+J1+K1+L1+M1)$												
Subtotal (O1) = J1+K1+L1+M1+N1												4,059,000	4,059,000	3,981,000
												8,522,000	8,522,000	8,319,000
												0	0	0
												1,875,000	1,875,000	1,830,000
												28,683,000	28,683,000	28,001,000
Subtotal (O1) = J1+K1+L1+M1+N1												43,136,000	43,136,000	42,111,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												159,902,000	159,902,000	156,102,000

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Table B4.2.8a Cost Estimate - Basin F Wastepile Medium Group
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)	A	3	30	0.00	/SY	6,000	BCY	1.000	1.000	1.000		0	0	0	0	0
H - No Action																
Subtotal (P)																
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Indirects, Overhead & Profit																
Contingency																
Subtotal (S = Q+R)																
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)																
													263,000,000	0	0	260,000,000

Table B4.2.9a Cost Estimate - Basin F Wastepile Medium Group
Alternative 9a: Direct Soil Washing (Solution Washing); Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Wastepile Excavation Including Vapor Controls	A	1	2	34,323,250.00	/EA	1	EA	1.000	1.000	1.000		38,387,000	38,387,000	38,459,000
H - Treatment of Effluent at CERCLA Facility	LS	2	--	3,838,000.00	/EA	1	EA	1.000	1.000	1.000		4,360,000	4,360,000	4,171,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	6,000	BCY	1.000	1.000	1.000		39,000	39,000	37,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	9	--	3.80	/BCY	6,000	BCY	1.000	1.000	1.000		26,000	26,000	18,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: LMNISO														
Mob/Demob														0
Indirects, Overhead & Profit														18,114,000
Engineering Design														1,812,000
Resident Engineering														906,000
Contingency														17,355,000
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	600,000	BCY	1.000	1.000	1.000		9,702,000	9,702,000	9,471,000
H - Soil Washing with Effluent Treatment at CERCLA Facility	LS	2	--	2,927,000.00	/EA	1	EA	1.000	1.000	1.000		3,340,000	3,340,000	3,181,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob														281,000
Contractor Markup														1,330,000
Engineering Design														1,317,000
Resident Engineering														439,000
Contingency														4,817,000
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													101,771,000	89,011,000

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Table B4.2.9a Cost Estimate - Basin F Wastepile Medium Group
Alternative 9a: Direct Soil Washing (Solution Washing); Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1997 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Excavation of Wastepile Overburden	LS	3	7	1.89	/BCY	75,000	BCY	1,000	1,000	1,000	1,000	1,000	182,000	14,742,000	147,000	12,157,000
H - Wastepile Excavation Including Vapor Controls	A	3	7	21.53	/BCY	600,000	BCY	1,000	1,000	1,000	1,000	1,000	1,208,000	1,465,000	1,208,000	1,208,000
H - Transportation of Contaminated Soil to Soil Washing Unit	A	3	7	1.07	/BCY-MILE	600,000	BCY	1,000	2,000	1,000	1,000	1,000	1,992,000	1,843,000	1,992,000	1,843,000
H - Treatment of Effluent at CERCLA Facility	A	3	7	2.91	/BCY	600,000	BCY	1,000	1,000	1,000	1,000	1,000	11,000	9,000	11,000	9,000
H - Load Treated Soil for Transport to Hazardous Landfill	A	3	8	1.55	/BCY	6,000	BCY	1,000	1,000	1,000	1,000	1,000	28,000	7,000	28,000	7,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	8	1.07	/BCY-MILE	6,000	BCY	1,000	1,000	1,000	1,000	1,000	876,000	708,000	876,000	708,000
H - On-Post Hazardous Waste Landfill (Particulates)	A	3	8	4.07	/BCY	6,000	BCY	1,000	1,000	1,000	1,000	1,000	1,178,000	949,000	1,178,000	949,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	8	1.28	/BCY	600,000	BCY	1,000	2,000	1,000	1,000	1,000	1,178,000	949,000	1,178,000	949,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	8	1.72	/BCY	600,000	BCY	1,000	1,000	1,000	1,000	1,000	147,000	119,000	147,000	119,000
H - Backfill with Treated Soil	A	3	8	1.72	/BCY	75,000	BCY	1,000	1,000	1,000	1,000	1,000	17,000	14,000	17,000	14,000
H - Backfill of Wastepile Overburden	A	3	8	0.18	/SY	75,000	SY	1,000	1,000	1,000	1,000	1,000				
H - Revegetation of Disturbed Areas	A	3	8	0.18	/SY	75,000	SY	1,000	1,000	1,000	1,000	1,000				
Subtotal (I)													21,803,000	17,928,000		
INDIRECT O&M COSTS (OPERATIONS)																
Mob/Demob				4.5%	J = 0.045 * (I)								981,000	807,000		
Indirects, Overhead & Profit				36.0%	K = 0.360 * (I+J)								8,886,000	7,307,000		
Engineering Design				0.5%	L = 0.005 * (I+J+K)								158,000	130,000		
Resident Engineering				2.0%	M = 0.020 * (I+J+K+L)								633,000	521,000		
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)								10,144,000	8,341,000		
Subtotal (O) = J+K+L+M+N													20,803,000	17,108,000		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
H - Thermal Description (Saturated Soil)	A	3	8	73.64	/BCY	600,000	BCY	1,000	1,000	1,000	1,000	1,000	50,421,000	40,823,000		
H - Soil Washing with Effluent Treatment at CERCLA Facility	A	3	8	32.40	/BCY	600,000	BCY	1,000	1,000	1,000	1,000	1,000	22,184,000	17,873,000		
Subtotal (II)													72,605,000	58,696,000		
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mob/Demob				0.0%	J1 = 0.000 * (II)								0	0		
Contractor Markup				10.0%	K1 = 0.100 * (II+J1)								7,281,000	5,850,000		
Engineering Design				0.0%	L1 = 0.000 * (II+J1+K1)								0	0		
Resident Engineering				2.0%	M1 = 0.020 * (II+J1+K1+L1)								1,587,000	1,287,000		
Contingency				40.0%	N1 = 0.400 * (II+J1+K1+L1+M1)								32,395,000	26,253,000		
Subtotal (OI) = J1+K1+L1+M1+N1													41,443,000	33,389,000		
TOTAL O&M COSTS (OPERATIONS) (OO) = I+O+II+OI													156,654,000	128,819,000		

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Table B4.2.9a Cost Estimate - Basin F Wastepile Medium Group
Alternative 9a: Direct Soil Washing (Solution Washing); Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
II - On-Post Hazardous Waste Landfill Closure (Particulates)	A	9	30	0.13	/BCY-YR	6,000	BCY	1.000	1.000	1.000		1,000	20,000	6,000
Subtotal (P)														
												1,000	20,000	8,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												300	8,000	3,000
Contingency												400	8,000	3,000
												1,000	18,000	7,000
Subtotal (S = Q+R)														
												2,000	35,000	15,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													238,000,000	276,000,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+D)														

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Table B4.2-13a Cost Estimate - Basin F Wastepile Medium Group
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Wastepile Overburden	LS	3	4	1.89	/BCY	75,000	BCY	1.000	1.000	1.000		162,000		147,000
H - Wastepile Excavation Including Vapor Controls	A	3	4	21.53	/BCY	600,000	BCY	1.000	1.000	1.000		14,742,000		13,053,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	4	1.07	/BCY-MILE	600,000	BCY	1.000	2.000	1.000		1,465,000		1,297,000
H - Load Treated Soil for Transport to Hazardous Waste Landfill	A	3	4	1.55	/BCY	6,000	BCY	1.000	1.000	1.000		11,000		9,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	1.07	/BCY-MILE	6,000	BCY	1.000	1.000	1.000		7,000		6,000
H - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	4.07	/BCY	6,000	BCY	1.000	1.000	1.000		28,000		25,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	1.28	/BCY	600,000	BCY	1.000	1.000	1.000		978,000		776,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	4	0.86	/BCY-MILE	600,000	BCY	1.000	2.000	1.000		1,178,000		1,043,000
H - Backfill with Treated Soil	A	3	4	1.72	/BCY	600,000	BCY	1.000	1.000	1.000		1,178,000		1,043,000
H - Backfill of Wastepile Overburden	A	3	4	1.72	/BCY	75,000	BCY	1.000	1.000	1.000		147,000		130,000
H - Revegetation of Disturbed Areas	A	3	4	0.18	/SY	75,000	SV	1.000	1.000	1.100	Disturbance	17,000		15,000
Subtotal (I)												19,810,000		17,544,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit	4.5%											881,000		788,000
Engineering Design	39.0%											8,074,000		7,150,000
Resident Engineering	0.5%											144,000		127,000
Contingency	1.8%											504,000		446,000
	30.0%											8,827,000		7,817,000
Subtotal (O = J+K+L+M+N)												18,440,000		16,330,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Saturated Soil)	A	3	4	73.64	/BCY	600,000	BCY	1.000	1.000	1.300		66,548,000		58,038,000
Subtotal (H)												66,548,000		58,038,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup	0.0%											0		0
Engineering Design	10.0%											6,555,000		5,804,000
Resident Engineering	0.0%											0		0
Contingency	2.0%											1,442,000		1,277,000
	40.0%											28,418,000		26,048,000
Subtotal (O1 = J1+K1+L1+M1+N1)												37,415,000		33,128,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+H+O1)												141,212,000		125,041,000

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Table B4.2-13a Cost Estimate - Basin F Wastepile Medium Group
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mitigation Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	5	30	0.13	/BCY-YR	6,000	BCY	1.000	1.000	1.000		1,000	23,000	11,000
Subtotal (P)														
												1,000	23,000	11,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												300	9,000	4,000
Contingency												400	10,000	5,000
Subtotal (S = Q+R)														
												1,000	19,000	9,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												2,000	42,000	20,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													230,000,000	211,000,000

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Table B4.3-1 Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	12,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	420,000	SY	1.000	1.000	1.000			0	0
Subtotal (A)													0	0
INDIRECT CAPITAL COSTS														
Mod/Demob	3.3%				COST CODE		LLSS							
Indirects, Overhead & Profit	39.0%				B = 0.033 * (A)									
Engineering Design	3.0%				C = 0.390 * (A+B)									
Resident Engineering	1.3%				D = 0.030 * (A+B+C)									
Contingency	26.3%				E = 0.013 * (A+B+C)									
					F = 0.263 * (A+B+C+D+E)									
Subtotal (G =B+C+D+E+F)													0	0
TOTAL CAPITAL COSTS (H = A+G)													0	0

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Table B4.3-1

Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	10,000	SV	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	420,000	SV	1,000	1,000	1,000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Secondary Basins	A	1	30	90,000.00	/EA-YR	1	EA	1,000	1,000	1,000		103,000	3,061,000	1,633,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												109,000	3,266,000	1,731,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												197,000	5,902,000	3,128,000
												5,900,000	3,130,000	

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Table B4.3-2 Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 2: Access Restrictions (Modifications to FF/A)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000			2,000	2,000
HB - Fences	LS	1	--	15.00	/LF	20,000	LF	1.000	1.000	1.000			342,000	342,000
Subtotal (A)													344,000	344,000
INDIRECT CAPITAL COSTS														
Mod/Demob													11,000	11,000
Indirects, Overhead & Profit													138,000	138,000
Engineering Design													15,000	15,000
Resident Engineering													6,000	6,000
Contingency													135,000	135,000
Subtotal (G = B+C+D+E+F)													308,000	308,000
TOTAL CAPITAL COSTS (H = A+G)													650,000	650,000

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Table B4.3-2 Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 2: Access Restrictions (Modifications to FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Habitat Modification	A	1	3	0.17	/SY	430,000	SY	1.000	1.000	1.000			83,000	79,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob													100,000	88,000
Indirects Overhead & Profit													3,000	3,000
Engineering Design													40,000	35,000
Resident Engineering													1,000	1,000
Contingency													2,000	2,000
													36,000	34,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Fences	A	2	30	0.75	/LF-YR	20,000	LF	1.000	1.000	1.000		17,000	486,000	258,000
HB - Habitat Modification	A	3	30	0.01	/SY-YR	430,000	SY	1.000	1.000	1.000		3,000	78,000	40,000
HB - Long Term Soil Monitoring, Secondary Basins	A	3	30	90,000.00	/EA-YR	1	EA	1.000	1.000	1.000		103,000	2,876,000	1,457,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects Overhead & Profit													128,000	3,623,000
Contingency													50,000	1,413,000
													54,000	1,511,000
													104,000	2,924,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long Term Activities]														
												233,000	6,731,000	3,484,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													7,380,000	4,140,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE LLSS														
3.3% B = 0.033 * (A)														
39.0% C = 0.390 * (A+B)														
3.0% D = 0.030 * (A+B+C)														
1.3% E = 0.013 * (A+B+C)														
26.3% F = 0.263 * (A+B+C+D+E)														
Subtotal (G = B+C+D+E+F)														
Subtotal (H = A+G)														
INDIRECT CAPITAL COSTS														
Mobil/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (I = A+G)														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (J = H+I)														

Table B4.3-6g
Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume		Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
								Factor	Factor					
DIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE LSS														
3.3% B = 0.033 * (A)														
39.0% C = 0.390 * (A+B)														
3.0% D = 0.030 * (A+B+C)														
1.3% E = 0.013 * (A+B+C)														
28.3% F = 0.283 * (A+B+C+D+E)														
Subtotal (G = B+C+D+E+F)														
INDIRECT CAPITAL COSTS														
Mobil/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (H = A+G)														
TOTAL CAPITAL COSTS (H = A+G)														

Table B4.3-6g Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	A	1	2	3.91	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	1,339,000	1,339,000	1,307,000
HB - Transportation of Contaminated Soil to Consolidation Area	A	1	2	1.07	/BCY-MILE	300,000	BCY	1.000	1.300	1.000	1.000	549,000	549,000	536,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	A	1	2	3.63	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	1,243,000	1,243,000	1,213,000
HB - Excavation of Borrow Material	A	1	2	1.89	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	647,000	647,000	632,000
HB - Transportation of Borrow Material to Backfill Area	A	1	2	0.86	/BCY-MILE	300,000	BCY	1.000	1.300	1.000	1.000	442,000	442,000	431,000
HB - Backfill with Borrow Material	A	1	2	1.72	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	569,000	569,000	575,000
HB - Installation of 6 inches of Topsoil	A	1	2	3.24	/SY	430,000	SY	1.000	1.000	1.000	1.000	1,590,000	1,590,000	1,552,000
HB - Revegetation of Disturbed Areas	A	1	2	0.18	/SY	430,000	SY	1.000	1.000	1.000	1.000 Disturbance	97,000	97,000	96,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													6,495,000	6,341,000
Cost CODE														
J = 0.039 * (I)													252,000	246,000
K = 0.390 * (I+J)													2,631,000	2,569,000
L = 0.005 * (I+J+K)													47,000	46,000
M = 0.015 * (I+J+K)													141,000	137,000
N = 0.275 * (I+J+K+L+M)													2,631,000	2,569,000
Subtotal (O = J+K+L+M+N)													5,701,000	5,565,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	2	30	0.00	/SY	430,000	SY	1.000	1.000	1.000	1.000	0	0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)													0	0
Cost CODE														
Q = 0.390 * (P)													0	0
R = 0.300 * (P+Q)													0	0
Subtotal (S)													0	0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													0	12,197,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													12,200,000	11,900,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3,000	BCY	1.000	1.000	1.000		20,000	20,000	18,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3,000	BCY	1.000	1.000	1.000		13,000	13,000	12,000
Subtotal (A)													33,000	30,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit												1,000	1,000	1,000
Engineering Design												13,000	13,000	12,000
Resident Engineering												1,000	1,000	1,000
Contingency												1,000	1,000	1,000
Subtotal (B = B+C+D+E+F)													28,000	27,000
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - Thermal Description (Dry Soil)	A	1	2	14.17	/BCY	300,000	BCY	1.000	1.000	1.000		4,851,000	4,851,000	4,736,000
Subtotal (A1)													4,851,000	4,736,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup												97,000	97,000	95,000
Engineering Design												485,000	485,000	483,000
Resident Engineering												490,000	490,000	478,000
Contingency												163,000	163,000	159,000
Subtotal (G1 = B1+C1+D1+E1+F1)													1,828,000	1,785,000
Subtotal (G1 = B1+C1+D1+E1+F1)													3,074,000	3,001,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													7,996,000	7,794,000

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Table B4.3-13a Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	3	--	3.91	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	1,338,000	1,338,000	1,214,000	
HB - Transportation of Contaminated Soil to Thermal Description Facility	LS	3	--	1.07	/BCY-MILE	300,000	BCY	1.000	1.500	1.000	1.000	549,000	549,000	498,000	
HB - Land Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3,000	BCY	1.000	1.000	1.000	1.000	5,000	5,000	5,000	
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3,000	BCY	1.000	1.000	1.000	1.000	4,000	4,000	3,000	
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	3,000	BCY	1.000	1.000	1.000	1.000	14,000	14,000	13,000	
HB - Land Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	438,000	438,000	397,000	
HB - Backfill of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	300,000	BCY	1.000	1.500	1.000	1.000	442,000	442,000	401,000	
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	589,000	589,000	534,000	
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	430,000	SY	1.000	1.000	1.000	1.000	1,580,000	1,580,000	1,442,000	
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	430,000	SY	1.000	1.000	1.000	1.000	97,000	97,000	86,000	
Subtotal (I)												5,067,000	5,067,000	4,536,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mold/Demob	COST CODE: MMMS														
Indirects	4.5%	$J = 0.045 * (I)$													
Overhead & Profit	39.0%	$K = 0.390 * (I+J)$													
Engineering Design	1.5%	$L = 0.015 * (I+J+K)$													
Resident Engineering	1.8%	$M = 0.018 * (I+J+K)$													
Contingency	28.8%	$N = 0.288 * (I+J+K+L+M)$													
Subtotal (O) = J+K+L+M+N												228,000	228,000	207,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
HB - Thermal Description (Dry Soil)	LS	3	--	49.13	/BCY	300,000	BCY	1.000	1.000	1.000	1.000	16,820,000	16,820,000	15,258,000	
Subtotal (I1)												16,820,000	16,820,000	15,258,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mold/Demob	COST CODE: D														
Contractor Markup	0.0%	$J1 = 0.000 * (I1)$													
Engineering Design	10.0%	$K1 = 0.100 * (I1+J1)$													
Resident Engineering	0.0%	$L1 = 0.000 * (I1+J1+K1)$													
Contingency	2.0%	$M1 = 0.020 * (I1+J1+K1)$													
Subtotal (O1) = J1+K1+L1+M1+N1												0	0	0	
Subtotal (O1) = J1+K1+L1+M1+N1												1,682,000	1,682,000	1,538,000	
Subtotal (O1) = J1+K1+L1+M1+N1												0	0	0	
Subtotal (O1) = J1+K1+L1+M1+N1												370,000	370,000	336,000	
Subtotal (O1) = J1+K1+L1+M1+N1												7,549,000	7,549,000	6,947,000	
Subtotal (O1) = J1+K1+L1+M1+N1												8,601,000	8,601,000	8,708,000	
Subtotal (O1) = J1+K1+L1+M1+N1												36,204,000	36,204,000	32,838,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)															
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)														
	A	3	30	0.13	/BCY-YR	3,000	BCY	1.000	1.000	1.000		400	12,000	8,000
Subtotal (P)												400	12,000	8,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 39.0% $Q = 0.390 * (P)$														
Contingency 30.0% $R = 0.300 * (P+Q)$														
Subtotal (S = Q+R)												400	10,000	5,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												1,000	23,000	11,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													44,200,000	40,600,000

HSB-13A.WQ1
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Table B4.3-19a
Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Table BA.3-19a Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	Units	Quantity	Units	Volume Factor	Mitigation Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Installation of 6 inches of Topsoil	A	1	6	/SY	430,000	SY	1.000	1.000	1.000		1,590,000	1,590,000		1,412,000
HB - Revegetation of Disturbed Areas	A	1	6	/SY	430,000	SY	1.000	1.000	1.100	Disturbance	87,000	87,000		86,000
Subtotal (I)												1,687,000		1,498,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit											55,000	55,000		48,000
Engineering Design											679,000	679,000		603,000
Resident Engineering											12,000	12,000		11,000
Contingency											36,000	36,000		32,000
Subtotal (O = J+K+L+M+N)												679,000		603,000
Subtotal (I + O = J+K+L+M+N+I)												1,492,000		1,288,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - In Situ RF/Microwave Heating - Deep	LS	1	--	/BCY	6,800	BCY	1.000	1.000	1.000		1,542,000	1,542,000		1,542,000
B - In Situ RF/Microwave Heating - Shallow	A	1	6	/BCY	290,000	BCY	1.000	1.000	1.000		72,035,000	72,035,000		63,985,000
Subtotal (H)												73,577,000		65,527,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														0
Contractor Markup											4,415,000	4,415,000		3,932,000
Engineering Design											360,000	360,000		347,000
Resident Engineering											780,000	780,000		695,000
Contingency											31,885,000	31,885,000		28,200,000
Subtotal (O1 = J1+K1+L1+M1+N1)												37,249,000		33,174,000
TOTAL O&M COSTS (OPERATIONS) (CO = I+O+H1+O1)												113,975,000		101,497,000
HSB-19A WQI														
SOILS DAA														

Table BA.3.19a Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	1	30	0.00	/SY	10,000	SY	1,000	1,000	1,000	1,000	0	0	0
B - No Action	A	6	30	0.00	/SY	420,000	SY	1,000	1,000	1,000	1,000	0	0	0
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
30.0% Q = 0.390 * (P)														
30.0% R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													1,400,000,000	127,000,000

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Table B4.4-1 Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	57,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
0														
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G =B+C+D+E+F)														
0														
TOTAL CAPITAL COSTS (H = A+G)														
0														

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Table B4.4-1 Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	57,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Former Basin F													0	0
HB - Site Reviews													0	0
HB - Maintenance of Existing Soil Cover													0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													0	0
Contingency													0	0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
HBFB-01.W01														
SOILS DAA														

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Table B4.4-1a

Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup

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Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action (Limited)	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000		0	0	0
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	2,200	BCY	1.000	1.000	1.000		14,000	14,000	14,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	2,200	BCY	1.000	1.000	1.000		10,000	10,000	8,000
B - No Action	LS	1	--	0.00	/SY	57,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (A)													24,000	22,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
COST CODE: LLSS														
3.3%	B = 0.033 * (A)													
39.0%	C = 0.390 * (A+B)													
3.0%	D = 0.030 * (A+B+C)													
1.3%	E = 0.013 * (A+B+C)													
26.3%	F = 0.263 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)													21,000	20,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	220,000	BCY	1.000	1.000	1.000		3,557,000	3,473,000	
Subtotal (A1)													3,557,000	3,473,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
2.0%	B1 = 0.020 * (A1)													
10.0%	C1 = 0.100 * (A1+B1)													
9.0%	D1 = 0.090 * (A1+B1+C1)													
3.0%	E1 = 0.030 * (A1+B1+C1)													
30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)													2,254,000	2,200,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													5,857,000	5,715,000
HFBI-01A.W01														
SOILS DAA														
16-Jan-93														

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	2,200	BCY	1,000	1,000	1,000		300		9,000		5,000	
HB - Long Term Soil Monitoring, Former Basin F	A	3	30	77,000.00	/EA-YR	1	EA	1,000	1,000	1,000		88,000		2,480,000		1,247,000	
HB - Maintenance of Existing Soil Cover	A	3	30	0.33	/SY-YR	420,000	SY	1,000	1,000	1,000		156,000		4,429,000		2,244,000	
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000		173,000		87,000	
Subtotal (P)																	
												253,000		7,071,000		3,583,000	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
Indirects, Overhead & Profit												98,000		2,756,000		1,397,000	
Contingency												105,000		2,948,000		1,494,000	
Subtotal (S = Q+R)																	
												204,000		5,706,000		2,891,000	
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																	
												456,000		12,777,000		6,474,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)																	
															44,200,000		33,400,000

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	2,200	BCY	1.000	1.000	1.000		14,000	14,000	14,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	2,200	BCY	1.000	1.000	1.000		10,000	10,000	9,000
H - Public Education	LS	1	--	1,900.00	1	EA	1.000	1.000	1.000		2,000	2,000	2,000
HB - Fences	LS	3	--	15.00	8,100	LF	1.000	1.000	1.000		138,000	138,000	128,000
Subtotal (A)												164,000	150,000
INDIRECT CAPITAL COSTS													
Mob/Demob	COST CODE: LLSS												
Indirects, Overhead & Profit	3.3%	B = 0.033 * (A)											
Engineering Design	39.0%	C = 0.390 * (A+B)											
Resident Engineering	3.0%	D = 0.030 * (A+B+C)											
Contingency	1.3%	E = 0.013 * (A+B+C)											
	28.3%	F = 0.283 * (A+B+C+D+E)											
Subtotal (G = B+C+D+E+F)												146,000	133,000
DIRECT SUBCONTRACT CAPITAL COSTS													
H - Thermal Description (Dry Soil)	A	1	2	14.17	220,000	BCY	1.000	1.000	1.000		3,557,000	3,473,000	3,473,000
Subtotal (A1)												3,557,000	3,473,000
INDIRECT SUBCONTRACT CAPITAL COSTS													
Mob/Demob	COST CODE: C												
Contractor Markup	2.0%	B1 = 0.020 * (A1)											
Engineering Design	10.0%	C1 = 0.100 * (A1+B1)											
Resident Engineering	8.0%	D1 = 0.080 * (A1+B1+C1)											
Contingency	3.0%	E1 = 0.030 * (A1+B1+C1)											
	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)											
Subtotal (G1 = B1+C1+D1+E1+F1)												2,254,000	2,200,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												6,122,000	5,965,000
HFBF-02A.W01													
SOILS DAA													
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Table B4.4-2a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 2a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Cover Overburden	LS	3	--	1.89	/BCY	110,000	BCY	1.000	1.000	1.000		237,000	237,000	215,000
H - Soil Excavation	LS	3	--	3.91	/BCY	220,000	BCY	1.000	1.000	1.200	Other Control	1,178,000	1,178,000	1,088,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	220,000	BCY	1.000	1.500	1.000		403,000	403,000	365,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	2,200	BCY	1.000	1.000	1.000		4,000	4,000	4,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,200	BCY	1.000	1.000	1.000		3,000	3,000	2,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	2,200	BCY	1.000	1.000	1.000		10,000	10,000	9,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	220,000	BCY	1.000	1.000	1.000		321,000	321,000	281,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	220,000	BCY	1.000	1.500	1.000		324,000	324,000	284,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	220,000	BCY	1.000	1.000	1.000		432,000	432,000	392,000
H - Backfill of Cover Overburden	LS	3	--	1.72	/BCY	110,000	BCY	1.000	1.000	1.000		216,000	216,000	196,000
HB - Habitat Modification	A	1	3	0.17	/SY	420,000	SY	1.000	1.000	1.000		81,000	81,000	77,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000		17,000	17,000	9,000
Subtotal (I)												3,228,000	3,228,000	2,923,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	3.9%			J = 0.039 * (I)			COST CODE: LMWS							
Indirects, Overhead & Profit	37.8%			K = 0.378 * (I+J)						126,000				
Engineering Design	1.5%			L = 0.015 * (I+J+K)						1,285,000				
Resident Engineering	1.5%			M = 0.015 * (I+J+K)						63,000				
Contingency	27.5%			N = 0.275 * (I+J+K+L+M)						63,000				
Subtotal (O = J+K+L+M+N)												1,307,000	1,307,000	1,185,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	220,000	BCY	1.000	1.000	1.000		12,334,000	12,334,000	11,188,000
Subtotal (H)												12,334,000	12,334,000	11,188,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	0.0%			J1 = 0.000 * (H)			COST CODE: D			0				
Contractor Markup	10.0%			K1 = 0.100 * (H+J1)						1,233,000				
Engineering Design	0.0%			L1 = 0.000 * (H+J1+K1)						0				
Resident Engineering	2.0%			M1 = 0.020 * (H+J1+K1)						271,000				
Contingency	40.0%			N1 = 0.400 * (H+J1+K1+L1+M1)						5,536,000				
Subtotal (O1 = J1+K1+L1+M1+N1)												7,040,000	7,040,000	6,388,000
TOTAL O&M COSTS (OPERATIONS) (OO = IO+H+O1)												25,437,000	25,437,000	23,067,000

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Table B4.4-2a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 2a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	2,200	BCY	1,000	1,000	1,000		300	9,000	5,000
HB - Fences	A	3	30	0.75	/LF-YR	8,100	LF	1,000	1,000	1,000		7,000	194,000	98,000
HB - Habitat Modification	A	3	30	0.01	/SY-YR	420,000	SY	0.830	1,000	1,000		2,000	63,000	32,000
HB - Long Term Soil Monitoring Former Basin F	A	3	30	77,000.00	/EA-YR	1	EA	1,000	1,000	1,000		98,000	2,460,000	1,247,000
HB - Maintenance of Existing Soil Cover	A	3	30	0.33	/SY-YR	420,000	SY	1,000	1,000	1,000		156,000	4,429,000	2,244,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	173,000	87,000
Subtotal (P)												282,000	7,328,000	3,714,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												102,000	2,866,000	1,448,000
Contingency												108,000	3,056,000	1,549,000
Subtotal (S = Q+R)												211,000	5,914,000	2,997,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												473,000	13,242,000	6,710,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													44,800,000	35,700,000

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Table B4.4-6c Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6c: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	2,200	BCY	1,000	1,000	1,000		14,000	14,000	14,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	2	--	3.80	/BCY	2,200	BCY	1,000	1,000	1,000		10,000	10,000	9,000
Subtotal (A)													24,000	23,000
INDIRECT CAPITAL COSTS														
COST CODE: L1SS														
Mob/Demob	3.3% B = 0.033 * (A)													
Indirects, Overhead & Profit	38.0% C = 0.380 * (A+B)													
Engineering Design	3.0% D = 0.030 * (A+B+C)													
Resident Engineering	1.3% E = 0.013 * (A+B+C)													
Contingency	28.3% F = 0.283 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)													21,000	20,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	220,000	BCY	1,000	1,000	1,000		3,557,000	3,473,000	3,473,000
Subtotal (A1)													3,557,000	3,473,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0% B1 = 0.020 * (A1)													
Contractor Markup	10.0% C1 = 0.100 * (A1+B1)													
Engineering Design	9.0% D1 = 0.090 * (A1+B1+C1)													
Resident Engineering	3.0% E1 = 0.030 * (A1+B1+C1)													
Contingency	30.0% F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)													2,254,000	2,200,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													5,857,000	5,716,000

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Table B4.4-6c Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6c: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Cover Overburden	LS	3	--	1.89	/BCY	110,000	BCY	1.000	1.000	1.000		237,000		215,000
H - Soil Excavation	LS	3	--	3.91	/BCY	220,000	BCY	1.000	1.000	1.200	Odor Control	1,178,000		1,088,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	220,000	BCY	1.000	2.000	1.000		537,000		487,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	2,200	BCY	1.000	1.000	1.000		4,000		4,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,200	BCY	1.000	1.000	1.000		3,000		2,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	2,200	BCY	1.000	1.000	1.000		10,000		9,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	220,000	BCY	1.000	1.000	1.000		321,000		281,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	220,000	BCY	1.000	2.000	1.000		432,000		392,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	220,000	BCY	1.000	1.000	1.000		432,000		392,000
H - Backfill of Cover Overburden	LS	3	--	1.72	/BCY	110,000	BCY	1.000	1.000	1.000		216,000		196,000
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06	/SY	420,000	SY	1.000	1.000	1.000		29,000		27,000
HB - Modification of Existing Soil Cover	LS	3	--	22.80	/SY	420,000	SY	1.000	1.000	1.000		10,928,000		9,912,000
HB - Re-vegetation of Disturbed Areas	LS	3	--	0.18	/SY	420,000	SY	1.000	1.000	1.100	Disturbance	95,000		86,000
Subtotal (I)													14,422,000	13,082,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	3.9%													
Indirects, Overhead & Profit	37.6%													
Engineering Design	0.5%													
Resident Engineering	1.5%													
Contingency	27.5%													
Subtotal (O = J+K+L+M+N)													5,559,000	5,077,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	220,000	BCY	1.000	1.000	1.000		12,304,000		11,188,000
Subtotal (I1)													12,334,000	11,188,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob	0.0%													
Contractor Markup	10.0%													
Engineering Design	0.0%													
Resident Engineering	2.0%													
Contingency	40.0%													
Subtotal (O1 = J1+K1+L1+M1+N1)													1,233,000	1,119,000
Subtotal (O1 = J1+K1+L1+M1+N1)													271,000	246,000
Subtotal (O1 = J1+K1+L1+M1+N1)													5,536,000	5,021,000
Subtotal (O1 = J1+K1+L1+M1+N1)													7,040,000	6,398,000
Subtotal (O1 = J1+K1+L1+M1+N1)													46,211,000	41,918,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)														

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Table B4.4-6c Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
 Alternative 6c: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																		
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30		0.13	/BCY-YR	2,200	BCY	1,000	1,000	1,000			300		9,000		5,000
HB - Modification of Existing Soil Cover	A	3	30		0.80	/SY-YR	420,000	SY	1,000	1,000	1,000			363,000		10,736,000		5,440,000
HB - Site Reviews	A	3	30		5,400.00	/EA-YR	1	EA	1,000	1,000	1,000			6,000		173,000		87,000
Subtotal (P)																		
														380,000		10,919,000		5,532,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																		
Indirects, Overhead & Profit														152,000		4,256,000		2,158,000
Contingency														163,000		4,553,000		2,307,000
Subtotal (S = Q+R)																		
														315,000		8,811,000		4,465,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																		
														705,000		19,729,000		9,997,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)																		
																71,800,000		57,600,000

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Table B4.4-6d Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6d: Caps/Covers (Clay/Soil Cap) with Modifications to Existing Systems

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (H)														

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Table B4.4-6d Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6d: Caps/Covers (Clay/Soil Cap) with Modifications to Existing Systems

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost	
DIRECT O&M COSTS (OPERATIONS)																
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	420,000	SY	1,000	1,000	1,000		29,000	29,000		29,000	
HB - Modification of Existing Soil Cover	LS	1	--	22.80	/SY	420,000	SY	1,000	1,000	1,000		10,928,000	10,928,000		10,928,000	
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	420,000	SY	1,000	1,000	1,100	Disturbance	95,000	95,000		95,000	
													11,051,000	11,051,000		
INDIRECT O&M COSTS (OPERATIONS)																
Subtotal (I)																
COST CODE LIMS																
Mod/Demob	J = 0.023 * (I)															
Indirects, Overhead & Profit	K = 0.378 * (I+J)															
Engineering Design	L = 0.005 * (I+J+K)															
Resident Engineering	M = 0.013 * (I+J+K)															
Contingency	N = 0.263 * (I+J+K+L+M)															
Subtotal (O = J+K+L+M+N)																
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
HB - Modification of Existing Soil Cover	A	2	30	0.80	/SY-YR	420,000	SY	1,000	1,000	1,000		383,000	11,120,000		5,808,000	
HB - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	179,000		93,000	
													390,000	11,298,000		5,899,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Subtotal (P)																
COST CODE LLSL																
Indirects, Overhead & Profit	Q = 0.390 * (P)															
Contingency	R = 0.300 * (P+Q)															
Subtotal (S)																
													152,000	4,408,000		2,301,000
													162,000	4,711,000		2,460,000
													314,000	9,118,000		4,760,000
													704,000	40,907,000		30,651,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														40,600,000		30,900,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														40,600,000		30,900,000

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Table B4.4-13a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	7,900	BCY	1.000	1.000	1.000	1.000	52,000	52,000	46,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	5	--	3.80	/BCY	7,900	BCY	1.000	1.000	1.000	1.000	34,000	34,000	28,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
MOB/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)														
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	790,000	BCY	1.000	1.000	1.000	1.000	12,775,000	12,775,000	12,470,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/Demob														
Contractor Markup														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B1 = B1+C1+D1+E1)														
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													21,031,000	20,518,000

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Table B4.4-13a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1993 (\$)	1993 (\$)
				Unit Cost								Total Cost	PW Cost	
DIRECT O&M COSTS (OPERATIONS)														
HB - Excavation of Cover Overburden	LS	2	--	1.89	/BCY	420,000	BCY	1.000	1.000	1.000		808,000	683,000	
HB - Soil Excavation	A	3	4	3.91	/BCY	790,000	BCY	1.000	1.000	1.200	Odor Control	4,230,000	3,745,000	
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	4	1.07	/BCY-MILE	790,000	BCY	1.000	2.000	1.000		1,929,000	1,708,000	
HB - Load Treated Soil for Transport to Hazardous Landfill	A	3	4	1.55	/BCY	7,900	BCY	1.000	1.000	1.000		14,000	12,000	
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	1.07	/BCY-MILE	7,900	BCY	1.000	1.000	1.000		10,000	8,000	
HB - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	4.07	/BCY	7,900	BCY	1.000	1.000	1.000		37,000	32,000	
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	1.28	/BCY	790,000	BCY	1.000	1.000	1.000		1,154,000	1,022,000	
HB - Transportation of Treated Soil to Backfill Excavation	A	3	4	0.86	/BCY-MILE	790,000	BCY	1.000	2.000	1.000		1,551,000	1,373,000	
HB - Backfill with Treated Soil	A	3	4	1.72	/BCY	790,000	BCY	1.000	1.000	1.000		1,551,000	1,373,000	
HB - Backfill of Cover Overburden	A	3	4	1.72	/BCY	420,000	BCY	1.000	1.000	1.000		824,000	730,000	
HB - Revegetation of Disturbed Areas	A	3	4	0.18	/SY	420,000	SY	1.000	1.000	1.100	Disturbance	95,000	84,000	
Subtotal (I)												12,300,000	10,951,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit				3.0%								477,000	424,000	
Engineering Design				37.6%								4,823,000	4,294,000	
Resident Engineering				0.5%								88,000	78,000	
Contingency				1.5%								284,000	235,000	
				27.5%								4,937,000	4,395,000	
Subtotal (O = J+K+L+M+N)												10,588,000	9,428,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - Thermal Desorption (Dry Soil)	A	3	4	49.13	/BCY	790,000	BCY	1.000	1.000	1.000		44,282,000	39,217,000	
Subtotal (I1)												44,282,000	39,217,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob														
Contractor Markup				0.0%								0	0	
Engineering Design				10.0%								4,428,000	3,922,000	
Resident Engineering				0.0%								0	0	
Contingency				2.0%								874,000	863,000	
				40.0%								19,878,000	17,601,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												25,282,000	22,385,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												92,462,000	81,982,000	

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Table B4.4-13a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	5	30	0.13	/BCY-YR	7,900	BCY	1.000	1.000	1.000		1,000	30,000	15,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
30.0% Q = 0.390 * (P)														
Contingency														
30.0% R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													114,000,000	103,000,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
INDIRECT CAPITAL COSTS													
Mod/Demob	0.0%											0	0
Indirects, Overhead & Profit	0.0%											0	0
Engineering Design	0.0%											0	0
Resident Engineering	0.0%											0	0
Contingency	0.0%											0	0
Subtotal (A)												0	0
DIRECT SUBCONTRACT CAPITAL COSTS													
H - In Situ RF/Microwave Heating - Deep	LS	1	--	7,066,000.00	1	UNIT	1.000	1.000	1.000		8,063,000	8,063,000	8,063,000
B - In Situ RF/Microwave Heating - Shallow	LS	1	--	7,066,000.00	1	UNIT	1.000	1.000	1.000		8,063,000	8,063,000	8,063,000
Subtotal (G = B+C+D+E+F)												0	0
INDIRECT SUBCONTRACT CAPITAL COSTS													
Mod/Demob	2.0%												
Contractor Markup	8.0%											323,000	323,000
Engineering Design	12.0%											997,000	997,000
Resident Engineering	1.5%											2,092,000	2,092,000
Contingency	30.0%											262,000	262,000
Subtotal (B1 = 0.020 * (A1)													
Subtotal (C1 = 0.080 * (A1+B1)													
Subtotal (D1 = 0.120 * (A1+B1+C1)													
Subtotal (E1 = 0.015 * (A1+B1+C1)													
Subtotal (F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)													
Subtotal (A1)												16,127,000	16,127,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													
Subtotal												9,601,000	25,728,000
Subtotal												9,601,000	25,728,000

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Table B4.4-19a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Installation of 6 inches of Topsoil	A	1	12	3.24	/SY	420,000	SY	1.000	1.000	1.000		1,553,000	1,553,000	1,204,000
HB - Revegetation of Disturbed Areas	A	1	12	0.18	/SY	420,000	SY	1.000	1.000	1.100	Disturbance	85,000	85,000	74,000
Subtotal (I)													1,648,000	1,278,000
INDIRECT O&M COSTS (OPERATIONS)														
COST CODE: LLSL														
Mob/Demob													54,000	42,000
Indirects, Overhead & Profit													684,000	515,000
Engineering Design													12,000	9,000
Resident Engineering													41,000	32,000
Contingency													725,000	563,000
Subtotal (O = J+K+L+M+N)													1,496,000	1,180,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - In Situ RF/Microwave Heating - Deep	A	1	12	198.66	/BCY	700,000	BCY	1.000	1.000	1.000		139,062,000	139,062,000	123,072,000
B - In Situ RF/Microwave Heating - Shallow	A	1	12	217.67	/BCY	89,000	BCY	1.000	1.000	1.000		22,107,000	22,107,000	17,145,000
Subtotal (I1)													160,800,000	140,217,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
COST CODE: L														
Mob/Demob													0	0
Contractor Markup													10,848,000	8,413,000
Engineering Design													958,000	743,000
Resident Engineering													1,916,000	1,486,000
Contingency													77,808,000	60,344,000
Subtotal (O1 = J1+K1+L1+M1+N1)													81,532,000	70,986,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)													275,478,000	213,641,000

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Table B4.4-19a Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	13	30	0.00	/SY	420,000	SY	1,000	1,000	1,000	1,000	0	0	0
B - No Action	A	2	30	0.00	/SY	420,000	SY	1,000	1,000	1,000	1,000	0	0	0
Subtotal (P)														
													0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: L1SL														
Indirects, Overhead & Profit 38.0% $Q = 0.380 * (P)$														
Contingency 30.0% $R = 0.300 * (P+Q)$														
Subtotal (S = Q+R)														
													0	0
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													0	0
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													301,000,000	239,000,000

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Table B4.5-1 Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 1: No Additional Action (Provisions of FF/A)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	260,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	2,000,000	SY	1.000	1.000	1.000			0	0
Subtotal (A)													0	0
INDIRECT CAPITAL COSTS														
Mob/Demob	LLSS													
Indirects, Overhead & Profit	3.3%	COST CODE B = 0.033 * (A)												
Engineering Design	39.0%	C = 0.390 * (A+B)												
Resident Engineering	3.0%	D = 0.030 * (A+B+C)												
Contingency	1.3%	E = 0.013 * (A+B+C)												
	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)													0	0

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Table B4.5-1

Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	260,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	2,000,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Basin F Exterior	A	1	30	8,000.00	/EA-YR	1	EA	1.000	1.000	1.000		9,000	274,000	145,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													178,000	95,000
Contingency													181,000	101,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												15,000	459,000	243,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												28,000	829,000	439,000

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Table B4.5-2
Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 2: Access Restrictions (Modifications to FFA)

[illegible]

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Table B4.5-6

Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	260,000	SY	1.000	1.000	1.000			16,000	18,000
H - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	260,000	SY	1.000	1.000	1.000			6,813,000	6,813,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	34,000	BCY	1.000	1.000	1.100	Disturbance		8,000	7,000
B - Agricultural Practices	A	1	2	0.20	/SY	2,000,000	SY	1.000	1.000	1.000			458,000	446,000
Subtotal (I) = J+K+L+M+N														
													7,385,000	7,384,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				3.3%									240,000	240,000
Indirects, Overhead & Profit				37.6%									2,882,000	2,878,000
Engineering Design				0.5%									53,000	53,000
Resident Engineering				1.3%									131,000	131,000
Contingency				28.3%									2,809,000	2,806,000
Subtotal (O) = J+K+L+M+N													6,118,000	6,108,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Installation of Clay/Soil Cap	A	2	30	0.80	/SY-YR	260,000	SY	1.000	1.000	1.000		237,000	6,884,000	3,594,000
B - Long Term Soil Monitoring, Basin F Exterior	A	3	30	7,000.00	/EA-YR	1	EA	1.000	1.000	1.000		8,000	224,000	113,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		8,000	173,000	87,000
													252,000	7,280,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit				38.0%									98,000	2,839,000
Contingency				30.0%									105,000	3,036,000
Subtotal (S) = Q+R													203,000	5,875,000
Subtotal (T) = I+O+P+S													454,000	28,698,000
Subtotal (U) = H+T													26,700,000	20,300,000
TOTAL O&M COSTS AND TOTAL O&M COSTS (U = H+T)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
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SOILS DAA														

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Table B4.5-6g
Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

[illegible]

Table B4.5-13a Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	800	BCY	1.000	1.000	1.000			5,000	5,000		
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	800	BCY	1.000	1.000	1.000			3,000	3,000		
Subtotal (A)													8,000	8,000		
INDIRECT CAPITAL COSTS																
COST CODE: LUS																
Mob/Demob	3.3%	B = 0.033 * (A)													300	300
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)													3,000	3,000
Engineering Design	3.0%	D = 0.030 * (A+B+C)													400	300
Resident Engineering	1.3%	E = 0.013 * (A+B+C)													200	100
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)													3,000	3,000
Subtotal (G = B+C+D+E+F)													8,000	7,000		
DIRECT SUBCONTRACT CAPITAL COSTS																
H - Thermal Description (Dry Soil)	A	1	2	14.17	/BCY	80,000	BCY	1.000	1.000	1.000			1,294,000	1,283,000		
Subtotal (A1)													1,294,000	1,283,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mob/Demob	2.0%	B1 = 0.020 * (A1)													26,000	25,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													132,000	129,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													131,000	128,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													44,000	43,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													498,000	478,000
Subtotal (G1 = B1+C1+D1+E1+F1)													820,000	800,000		
TOTAL CAPITAL COSTS (H = A+G; A1+G1)													2,130,000	2,078,000		

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	LS	3	--	3.91	/BCY	80,000	BCY	1.000	1.000	1.000		397,000	397,000	324,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	80,000	BCY	1.000	2.000	1.000		186,000	186,000	177,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	800	BCY	1.000	1.000	1.000		1,000	1,000	1,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	800	BCY	1.000	0.500	1.000		500	500	400
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	800	BCY	1.000	1.000	1.000		4,000	4,000	3,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	80,000	BCY	1.000	1.000	1.000		117,000	117,000	108,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	80,000	BCY	1.000	2.000	1.000		157,000	157,000	142,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	80,000	BCY	1.000	1.000	1.000		137,000	137,000	128,000
H - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	260,000	SY	1.000	1.000	1.000		861,000	861,000	872,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	260,000	SY	1.000	1.000	1.000		53,000	53,000	48,000
B - Agricultural Practices	A	1	2	0.20	/SY	2,000,000	SY	1.000	1.000	1.000	Disturbance	502,000	502,000	480,000
Subtotal (I)												2,508,000	2,307,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				COST CODE: HMMS										
Indirects, Overhead & Profit				J = 0.051 * (I)										
Engineering Design				K = 0.403 * (I+J)										
Resident Engineering				L = 0.015 * (I+J+K)										
Contingency				M = 0.020 * (I+J+K)										
				N = 0.313 * (I+J+K+L+M)										
Subtotal (D = J+K+L+M+N)												128,000	118,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	80,000	BCY	1.000	1.000	1.000		4,485,000	4,485,000	4,098,000
Subtotal (H)												4,485,000	4,098,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				COST CODE: D										
Contractor Markup				J1 = 0.000 * (H)										
Engineering Design				K1 = 0.100 * (H+J1)										
Resident Engineering				L1 = 0.000 * (H+J1+K1)										
Contingency				M1 = 0.020 * (H+J1+K1)										
				N1 = 0.400 * (H+J1+K1+L1+M1)										
Subtotal (O1 = J1+K1+L1+M1+N1)												0	0	
Subtotal (O1 = J1+K1+L1+M1+N1)												448,000	407,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												0	0	
Subtotal (O1 = J1+K1+L1+M1+N1)												88,000	80,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												2,013,000	1,828,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												2,580,000	2,322,000	
TOTAL O&M COSTS (OPERATIONS) (OO = IO+H+O1)												12,064,000	11,012,000	
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Table B4.5-13a Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	800	BCY	1.000	1.000	1.000		100	3,000	2,000
B - Long Term Soil Monitoring, Basin F Exterior	A	3	30	7,000.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	224,000	113,000
B - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (P)												14,000	400,000	202,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												6,000	156,000	79,000
Contingency												6,000	167,000	84,000
Subtotal (S = Q+R)												12,000	322,000	163,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												28,000	722,000	369,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													14,900,000	13,500,000

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Table B4.5-19b Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 19b: In Situ Thermal Treatment (RF/Microwave Heating, Surface Soil Heating)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Installation of 6 Inches of Topsoil	A	1	5	3.24	/SY	260,000		1.000	1.000	1.000			841,000		874,000
H - Revegetation of Disturbed Areas	A	1	5	0.18	/SY	260,000		1.000	1.000	1.000	Disturbance		50,000		53,000
B - Agricultural Practices	A	1	2	0.20	/SY	2,000,000		1.000	1.000	1.000			458,000		446,000
Subtotal (I)													1,477,000		1,373,000
INDIRECT O&M COSTS (OPERATIONS)															
Mobil/Demob													48,000		48,000
Indirects, Overhead & Profit													585,000		553,000
Engineering Design													11,000		10,000
Resident Engineering													32,000		30,000
Contingency													594,000		553,000
Subtotal (O) = J+K+L+M+N													1,270,000		1,180,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - In Situ RF/Microwave Heating - Deep	LS	1	--	198.66	/RCY	2,000		1.000	1.000	1.000			453,000		453,000
H - In Situ Surface Soil Heating	A	1	5	27.30	/SY	75,000		1.000	1.000	1.000			2,337,000		2,124,000
Subtotal (H)													2,790,000		2,578,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mobil/Demob													0		0
Contractor Markup													186,000		180,000
Engineering Design													15,000		14,000
Resident Engineering													60,000		56,000
Contingency													1,224,000		1,131,000
Subtotal (O1) = J1+K1+L1+M1+N1													1,484,000		1,380,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+H+O1)													7,040,000		6,521,000

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Table B4.5-19b

Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 19b: In Situ Thermal Treatment (RT/Microwave Heating, Surface Soil Heating)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	5	30	0.00	/SY	260,000	SY	1,000	1,000	1,000		0	0	0
B - Long Term Soil Monitoring, Basin F Exterior	A	2	30	7,000.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	222,000	121,000
R - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	179,000	83,000
Subtotal (P)												14,000	410,000	214,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
Contingency														
Q = 0.380 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S = Q+R)												11,000	331,000	173,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												28,000	742,000	387,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													22,100,000	21,300,000

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Table B4.6-1 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	ASY	190,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	ASY	19,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Non-Demob														
Indirects - Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
													0	0
INDIRECT CAPITAL COSTS														
Non-Demob														
Indirects - Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)														
													0	0
Subtotal (G) = B+C+D+E+F														
													0	0
TOTAL CAPITAL COSTS (H) = A+G														
													0	0

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Table B4.6-1 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	190,000	SV	1,000	1,000	1,000		0	0	0
B - No Action	LS	1	--	0.00	/SY	19,000	SV	1,000	1,000	1,000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I) = J+K+L+M+N														
Indirects, Overhead & Profit	3.3%													
Engineering Design	36.0%													
Resident Engineering	0.5%													
Contingency	1.3%													
Subtotal (I) = J+K+L+M+N														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Sanitary Sewers	A	1	30	24,000.00	/EA-YR	1	EA	1,000	1,000	1,000		32,000	859,000	508,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
Subtotal (I) = J+K+L+M+N														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	36.0%													
Contingency	30.0%													
Subtotal (I) = J+K+L+M+N														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (I) = J+K+L+M+N														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal (I) = J+K+L+M+N														

Table B4.6-2 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 2: Access Restrictions (Modifications to FTA)

Cost Item	Cost Type	Start Year	End Year	1997 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000			2,000	2,000
B - No Action	LS	1	--	0.00	/SY	19,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
													2,000	2,000
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)														
													100	100
													1,000	1,000
													100	100
													30	30
													1,000	1,000
Subtotal (G) = B+C+D+E+F														
													2,000	2,000
TOTAL CAPITAL COSTS (H = A+G)														
													3,000	3,000
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Table B4.6-2 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Sewer Signs	LS	1	--	0.09	/LF	124,000	LF	1.000	1.000	2.000	Spacing		24,000	24,000
H - Plugging of Sewer Lines	LS	1	--	149.00	/CY	7,000	CY	1.000	1.000	1.000			1,180,000	1,180,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
B - No Action	LS	1	--	0.00	/SY	19,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													1,232,000	1,224,000
Indirects, Overhead & Profit													55,000	55,000
Engineering Design													518,000	515,000
Resident Engineering													27,000	27,000
Contingency													32,000	31,000
													536,000	532,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Sewer Signs	A	1	30	0.0043	/LF	124,000	LF	1.000	1.000	2.000	Spacing		37,000	19,000
HB - Long Term Soil Monitoring, Sanitary Sewers	A	1	30	28,000.00	/EA-YR	1	EA	1.000	1.000	1.000			969,000	508,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000			185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													39,000	1,180,000
Contingency													15,000	480,000
													16,000	492,000
													32,000	952,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													71,000	4,532,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+S+T)														
													4,540,000	3,520,000

Table B4.6-3 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	170,000	BCY	1.000	1.000	1.000		1,110,000	1,110,000	
HB - On-Post Hazardous Waste Landfill Closure	LS	1	--	3.80	170,000	BCY	1.000	1.000	1.000		737,000	737,000	
Subtotal (A)												1,847,000	1,847,000
INDIRECT CAPITAL COSTS													
Mob/Demob				3.3%				COST CODE			LLSS		
Indirects, Overhead & Profit				36.0%				B = 0.033 * (A)			60,000		
Engineering Design				3.0%				C = 0.380 * (A+B)			744,000		
Resident Engineering				1.3%				D = 0.030 * (A+B+C)			60,000		
Contingency				26.3%				E = 0.013 * (A+B+C)			33,000		
								F = 0.263 * (A+B+C+D+E)			725,000		
Subtotal (G = B+C+D+E+F)												1,642,000	1,642,000
TOTAL CAPITAL COSTS (H = A+G)												3,489,000	3,489,000

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Table B4.6-3 Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Excavation of Sewer Overburden	LS	1	--	1.51	/BCY	230,000	BCY	1.000	1.000	1.000			368,000	368,000
HB - Removal of Steel/Cast Iron Pipe	LS	2	--	13.81	/LF	94,600	LF	1.000	1.000	1.000			1,420,000	1,420,000
HB - Sewer Excavation	LS	2	--	3.82	/BCY	170,000	BCY	1.000	1.000	1.000			741,000	706,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	170,000	BCY	1.010	3.000	1.000			628,000	599,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	170,000	BCY	1.010	1.000	1.000			787,000	759,000
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	170,000	BCY	1.000	1.000	1.000			387,000	348,000
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	170,000	BCY	1.000	1.500	1.000			250,000	238,000
HB - Backfill Sewers with Borrow Material	LS	2	--	1.56	/BCY	170,000	BCY	1.000	1.000	1.000			303,000	288,000
HB - Backfill of Sewer Overburden	LS	2	--	1.56	/BCY	230,000	BCY	1.000	1.000	1.000			409,000	390,000
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	210,000	SY	1.000	1.000	1.100	Disturbance		47,000	45,000
												5,431,000	5,191,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mo/Demob	Subtotal (I)													
Indirects, Overhead & Profit	COST CODE MUMS													
Engineering Design	J = 0.038 * (I)													
Resident Engineering	K = 0.380 * (I+J)													
Contingency	L = 0.005 * (I+J+K)													
	M = 0.015 * (I+J+K)													
	N = 0.275 * (I+J+K+L+M)													
												4,787,000	4,557,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	170,000	BCY	1.000	1.000	1.000		25,000	731,000	382,000
												25,000	731,000	382,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	Subtotal (P)													
Contingency	COST CODE LLSL													
	Q = 0.380 * (P)													
	R = 0.300 * (P+Q)													
												10,000	265,000	149,000
												11,000	305,000	159,000
												20,000	590,000	308,000
												46,000	11,520,000	10,438,000
													15,000,000	13,900,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost 1995 (\$)	Total Cost 1995 (\$)	PW Cost 1995 (\$)
DIRECT CAPITAL COSTS														
HIB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	-	5.72	/BCY	1,700	BCY	1.000	1.000	1.000		11,000	11,000	11,000
HIB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	-	3.80	/BCY	1,700	BCY	1.000	1.000	1.000		7,000	7,000	7,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: LUSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)										1,000	1,000	1,000
Engineering Design	3.0%	D = 0.030 * (A+B+C)										7,000	7,000	7,000
Resident Engineering	1.3%	E = 0.013 * (A+B+C)										1,000	1,000	1,000
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)										300	300	300
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
HIB - Thermal Description (Saturated Soil)	A	1	2	14.17	/BCY	170,000	BCY	1.000	1.000	1.000		2,749,000	2,749,000	2,684,000
Subtotal (H)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)										55,000	55,000	54,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)										280,000	280,000	274,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)										278,000	278,000	271,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)										83,000	83,000	80,000
Subtotal (I = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H + A+G+A1+G1)														
Subtotal (J = H+I+A+G+A1+G1)														
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Table BA.6-13a Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Excavation of Sewer Overhead	LS	3	--	1.51	/BCY	230,000	BCY	1.000	1.000	1.000		386,000	359,000	
HB - Removal of Steel/Cast Iron Pipe	LS	3	--	13.81	/LF	94,600	LF	1.000	1.000	1.000		1,481,000	1,352,000	
HB - Sewer Excavation	LS	3	--	3.82	/BCY	170,000	BCY	1.000	1.000	1.000		741,000	672,000	
HB - Transportation of Contaminated Soil to Thermal Description Facility	LS	3	--	1.07	/BCY-MILE	170,000	BCY	1.010	3.000	1.000		628,000	570,000	
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1,700	BCY	1.010	1.000	1.000		3,000	3,000	
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1,700	BCY	1.010	1.000	1.000		2,000	2,000	
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	1,700	BCY	1.000	1.000	1.000		8,000	7,000	
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	170,000	BCY	1.010	3.000	1.000		752,000	682,000	
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	170,000	BCY	1.010	3.000	1.000		506,000	459,000	
HB - Backfill of Treated Soil for Sanitary/Process	LS	3	--	1.56	/BCY	170,000	BCY	1.000	1.000	1.000		303,000	275,000	
HB - Backfill of Sewer Overhead	LS	3	--	1.56	/BCY	230,000	BCY	1.000	1.000	1.000		408,000	371,000	
HB - Revetigation of Disturbed Areas	LS	3	--	0.18	/SY	210,000	SY	1.000	1.000	1.100	Disturbance	47,000	43,000	
Subtotal (I)												5,288,000	4,798,000	
INDIRECT O&M COSTS (OPERATIONS)														
MOB/DEMOL														
COST CODE: MIMS														
Indirects, Overhead & Profit	3.9%	$J = 0.039 * (I)$												
Engineering Design	38.0%	$K = 0.380 * (I+J)$												
Resident Engineering	0.5%	$L = 0.005 * (I+J+K)$												
Contingency	1.5%	$M = 0.015 * (I+J+K)$												
	27.5%	$N = 0.275 * (I+J+K+L+M)$												
Subtotal (O) = J+K+L+M+N												4,841,000	4,210,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - Thermal Description (Saturated Soil)	LS	3	--	73.64	/BCY	170,000	BCY	1.010	1.000	1.000		14,428,000	13,087,000	
Subtotal (I)												14,428,000	13,087,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
MOB/DEMOL														
COST CODE: D														
Contractor Markup	0.0%	$J1 = 0.000 * (I1)$												
Engineering Design	10.0%	$K1 = 0.100 * (I1+J1)$												
Resident Engineering	0.0%	$L1 = 0.000 * (I1+J1+K1)$												
Contingency	2.0%	$M1 = 0.020 * (I1+J1+K1)$												
	40.0%	$N1 = 0.400 * (I1+J1+K1+L1+M1)$												
Subtotal (O1) = J1+K1+L1+M1+N1												8,236,000	7,470,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												32,594,000	29,564,000	

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Table B4.6-13a Cost Estimate - Sewer Systems Medium Group - Sanitary/Process Water Sewers Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/RCY-YR	1,700	BCY	1.000	1.000	1.000		300	7,000	4,000
Subtotal (S = Q+R)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (Q = 0.380 * P)														
Subtotal (R = 0.300 * (P+Q))														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													37,100,000	34,000,000

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Table BA.7-1 Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost							Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS													
H - No Action	LS	1	--	0.00	100,000	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	74,000	SY	1.000	1.000	1.000			0	0
Subtotal (A)													
INDIRECT CAPITAL COSTS													
Mob/Demob												0	0
Indirects, Overhead & Profit												0	0
Engineering Design												0	0
Resident Engineering												0	0
Contingency												0	0
Subtotal (B -B+C+D+E+F)													
TOTAL CAPITAL COSTS (H + A+G)													
												0	0

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Table B4.7-1
Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	100,000	SY	1.000	1.000	1.000		0	0	0
A - No Action	LS	1	--	0.00	/SY	74,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
Subtotal (I) = J+K+L+M+N														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Soil Monitoring, Chemical Sewers	A	1	30	29,000.00	/EA-YR	1	EA	1.000	1.000	1.000		33,000	883,000	528,000
HA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
Subtotal (P) = J+K+L+M+N														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													15,000	458,000
Contingency													16,000	481,000
Subtotal (S) = R+Q+P+S														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (T) = I+O+P+S														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

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Table BA.7-1a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
 Alternative 1a: Direct Thermal Description (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost		
DIRECT CAPITAL COSTS																	
H - No Action (Limited)	LS	1	--	0.00	/SV	100,000	SV	1.000	1.000	1.000		0	0	0	0		
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/RCY	470	RCY	1.000	1.000	1.000		3,000	3,000	3,000	3,000		
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/RCY	470	RCY	1.000	1.000	1.000		2,000	2,000	2,000	2,000		
Subtotal (A)																	
5,000																	
INDIRECT CAPITAL COSTS																	
COST CODE: LLSS																	
Mod/Demob	3.3%	B = 0.033 * (A)														200	200
Indirects, Overhead & Profit	36.0%	C = 0.360 * (A+B)														2,000	2,000
Engineering Design	3.0%	D = 0.030 * (A+B+C)														200	200
Resident Engineering	1.3%	E = 0.013 * (A+B+C)														100	100
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)														2,000	2,000
Subtotal (G = B+C+D+E+F)																	
5,000																	
DIRECT SUBCONTRACT CAPITAL COSTS																	
H - Thermal Description (Saturated Soil)	A	1	2	14.17	/RCY	47,000	RCY	1.000	1.000	1.000		760,000	760,000	742,000	742,000		
Subtotal (A1)																	
760,000																	
INDIRECT SUBCONTRACT CAPITAL COSTS																	
COST CODE: C																	
Mod/Demob	2.0%	B1 = 0.020 * (A1)														15,000	15,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)														76,000	76,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)														77,000	75,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)														26,000	25,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)														267,000	260,000
Subtotal (G1 = B1+C1+D1+E1+F1)																	
482,000																	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)																	
1,251,000																	

Table B4.7-1a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 1a: Direct Thermal Description (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1993 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
A - Agent Screening During Excavation	LS	2	--	0.10	/BCY	47,000	BCY	1.000	1.000	1.000		5,000	5,000	5,000
H - No Action (Limited)	LS	1	--	0.00	/SY	100,000	SY	1.000	1.000	1.000		0	0	0
H - Excavation of Sewer Overburden	LS	3	--	1.51	/BCY	120,000	BCY	1.000	1.000	1.000		207,000	207,000	186,000
HA - Removal of Steel/Cast Iron Pipe	LS	3	--	20.68	/LF	13,000	LF	1.000	1.000	1.200	Odor Control	388,000	388,000	334,000
HA - Excavate Chemical Sewers	LS	3	--	7.25	/BCY	47,000	BCY	1.000	1.000	1.200	Odor Control	467,000	467,000	423,000
HA - Transportation of Chemical Sewers to Thermal Description Unit	LS	3	--	1.05	/BCY-MILE	47,000	BCY	1.010	1.500	1.000		85,000	85,000	77,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	470	BCY	1.010	1.000	1.000		1,000	1,000	1,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	470	BCY	1.000	1.000	1.000		1,000	1,000	1,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	470	BCY	1.000	1.000	1.000		2,000	2,000	2,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	47,000	BCY	1.010	1.000	1.000		68,000	68,000	63,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	47,000	BCY	1.010	1.500	1.000		70,000	70,000	63,000
HA - Backfill of Treated Soil for Chemical Sewers	LS	3	--	1.56	/BCY	47,000	BCY	1.000	1.000	1.000		84,000	84,000	78,000
H - Backfill of Sewer Overburden	LS	3	--	0.18	/BCY	120,000	BCY	1.000	1.000	1.000		214,000	214,000	184,000
H - Revegetation of Disturbed Areas	LS	3	--	0.00	/SY	49,000	SY	1.000	1.000	1.100	Disturbance	11,000	11,000	10,000
A - No Action	LS	1	--	0.00	/SY	74,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (I)												1,593,000	1,593,000	1,436,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	COST CODE: HWMS													
Indirects, Overhead & Profit	J = 0.051 * (I)													
Engineering Design	K = 0.403 * (I+J)													
Resident Engineering	L = 0.015 * (I+J+K)													
Contingency	M = 0.020 * (I+J+K+L)													
	N = 0.313 * (I+J+K+L+M)													
Subtotal (O) = J+K+L+M+N												1,598,000	1,598,000	1,441,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Description (Saturated Soil)	LS	3	--	73.64	/BCY	47,000	BCY	1.010	1.000	1.000		3,989,000	3,989,000	3,618,000
Subtotal (I1)												3,989,000	3,989,000	3,618,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	COST CODE: D													
Contractor Markup	J1 = 0.000 * (I1)													
Engineering Design	K1 = 0.100 * (I1+J1)													
Resident Engineering	L1 = 0.000 * (I1+J1+K1)													
Contingency	M1 = 0.020 * (I1+J1+K1)													
	N1 = 0.400 * (I1+J1+K1+L1+M1)													
Subtotal (O1) = J1+K1+L1+M1+N1												2,277,000	2,277,000	2,085,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												9,439,000	9,439,000	8,561,000

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Table B4.7-1a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
 Alternative 1a: Direct Thermal Description (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Factor	Mileage	Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
HA - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	470	BCY	1,000	1,000	1,000	1,000	1,000	100	2,000		1,000
HA - Long Term Soil Monitoring, Chemical Sewers	A	3	30	29,000.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	1,000	30,000	827,000		470,000
HA - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	1,000	6,000	173,000		87,000
Subtotal (P)																
													38,000	1,101,000		558,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
COST CODE: LLSL																
Indirects, Overhead & Profit																
30.0% Q = 0.380 * (P)																
30.0% R = 0.300 * (P+Q)																
Subtotal (S = Q+R)																
													15,000	428,000		218,000
													16,000	459,000		233,000
													32,000	888,000		450,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																
													71,000	1,990,000		1,008,000

TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)

12,700,000

10,800,000

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Table BA.7-2 Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
H - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000	1.000	2,000	2,000	2,000
A - No Action	LS	1	--	0.00	/SY	74,000	SY	1.000	1.000	1.000	1.000	0	0	0
Subtotal (A)														2,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G = B+C+D+E+F)														2,000
TOTAL CAPITAL COSTS (H = A+G)														3,000

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Table B4.7-2

Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 2: Access Restrictions (Modifications to FFA)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Plugging of Sewer Lines	LS	1	--	149.00	/CY	970	CY	1.000	1.000	1.000			165,000	165,000
H - Sewer Signs	LS	3	--	0.09	/LF	87,000	LF	1.000	1.000	2.000	Spacing		17,000	16,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
A - No Action	LS	1	--	0.00	/SY	74,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													199,000	199,000
Indirects: Overhead & Profit													9,000	9,000
Engineering Design													84,000	80,000
Resident Engineering													4,000	4,000
Contingency													5,000	5,000
													87,000	82,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Sewer Signs	A	1	30	0.00	/LF	87,000	LF	1.000	1.000	2.000	Spacing		26,000	14,000
H - Long Term Soil Monitoring, Chemical Sewers	A	1	30	29,000.00	/EA-YR	1	EA	1.000	1.000	1.000		33,000	993,000	528,000
HA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	88,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects: Overhead & Profit													40,000	1,203,000
Contingency													16,000	469,000
													17,000	502,000
													32,000	871,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													72,000	2,562,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													2,570,000	1,520,000

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Table B4.7-2a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 2a: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Access Restrictions (Modifications to FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	470	BCY	1.000	1.000	1.000			3,000	3,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	470	BCY	1.000	1.000	1.000			2,000	2,000
H - Public Education	LS	1	--	1,500.00	1	EA	1.000	1.000	1.000			2,000	2,000
Subtotal (A)													
INDIRECT CAPITAL COSTS													
MOB/DEMOLITION													
Indirects, Overhead & Profit												200	200
Engineering Design												3,000	3,000
Resident Engineering												300	300
Contingency												100	100
Subtotal (B = 0.033 * (A))													
CONSTRUCTION													
Indirects, Overhead & Profit												300	300
Engineering Design												100	100
Resident Engineering												3,000	3,000
Contingency												6,000	6,000
Subtotal (C = 0.390 * (A+B))													
OPERATION & MAINTENANCE													
Indirects, Overhead & Profit												300	300
Engineering Design												100	100
Resident Engineering												3,000	3,000
Contingency												6,000	6,000
Subtotal (D = 0.013 * (A+B+C))													
Subtotal (E = 0.263 * (A+B+C+D+E))													
Subtotal (F = 0.283 * (A+B+C+D+E))													
Subtotal (G = B+C+D+E+F)													
DIRECT SUBCONTRACT CAPITAL COSTS													
H - Thermal Description (Saturated Soil)	A	1	2	14.17	47,000	BCY	1.000	1.000	1.000			760,000	742,000
Subtotal (A1)													
INDIRECT SUBCONTRACT CAPITAL COSTS													
MOB/DEMOLITION													
Indirects, Overhead & Profit												15,000	15,000
Engineering Design												76,000	76,000
Resident Engineering												77,000	75,000
Contingency												26,000	25,000
Subtotal (B1 = 0.020 * (A1))													
CONSTRUCTION													
Indirects, Overhead & Profit												26,000	25,000
Engineering Design												267,000	260,000
Resident Engineering												462,000	470,000
Contingency												1,254,000	1,224,000
Subtotal (C1 = 0.100 * (A1+B1))													
Subtotal (D1 = 0.090 * (A1+B1+C1))													
Subtotal (E1 = 0.030 * (A1+B1+C1))													
Subtotal (F1 = 0.300 * (A1+B1+C1+D1+E1))													
Subtotal (G1 = B1+C1+D1+E1+F1)													
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													

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Table B4.7-2a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 2a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Excavation of Sewer Overburden	LS	3	--	1.51	/RCY	47,000	RCY	1.000	1.000	1.000		81,000			73,000
HA - Removal of Steel/Cast Iron Pipe	LS	3	--	20.68	/LF	47,000	RCY	1.000	1.000	1.200	Odor Control	1,331,000			1,207,000
HA - Excavate Chemical Sewers	LS	3	--	7.25	/RCY	47,000	RCY	1.000	1.000	1.200	Odor Control	487,000			423,000
HA - Transportation of Chemical Sewers to Thermal Desorption Unit	LS	3	--	1.05	/RCY-MILE	47,000	RCY	1.010	2.000	1.000		114,000			103,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/RCY	47,000	RCY	1.000	1.000	1.000		83,000			75,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/RCY-MILE	470	RCY	1.000	2.000	1.000		1,000			1,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/RCY	470	RCY	1.000	1.000	1.000		2,000			2,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/RCY	470	RCY	1.000	1.000	1.000		1,000			1,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/RCY-MILE	47,000	RCY	1.000	2.000	1.000		82,000			84,000
HA - Backfill of Treated Soil for Chemical Sewers	LS	3	--	1.56	/RCY	47,000	RCY	1.010	1.000	1.000		85,000			77,000
H - Backfill of Sewer Overburden	LS	3	--	1.56	/RCY	120,000	RCY	1.000	1.000	1.000		214,000			194,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	49,000	SY	1.000	1.000	1.100	Disturbance	11,000			10,000
H - Plugging of Sewer Lines	LS	1	--	149.00	/CY	970	CY	1.000	1.000	1.000		165,000			165,000
H - Sewer Signs	LS	1	--	0.09	/LF	87,000	LF	1.000	1.000	1.000		9,000			9,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000		17,000			9,000
A - No Action	LS	1	--	0.00	/SY	74,000	SY	1.000	1.000	1.000		0			0
				Subtotal (I)											
				2,672,000											
INDIRECT O&M COSTS (OPERATIONS)															
				COST CODE: HAMS											
Mod/Demob				5.1%	$J = 0.051 * (I)$										
Indirects, Overhead & Profit				40.3%	$K = 0.403 * (I+J)$										
Engineering Design				1.5%	$L = 0.015 * (I+J+K)$										
Resident Engineering				2.0%	$M = 0.020 * (I+J+K)$										
Contingency				31.3%	$N = 0.313 * (I+J+K+L+M)$										
				Subtotal (O) = J+K+L+M+N											
				137,000											
				1,130,000											
				59,000											
				79,000											
				1,274,000											
				2,679,000											
				2,440,000											
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Thermal Desorption (Saturated Soil)	LS	3	--	73.64	/RCY	47,000	RCY	1.010	1.000	1.000		3,988,000			3,618,000
				Subtotal (I1)											
				3,988,000											
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
				COST CODE: D											
Mod/Demob				0.0%	$J1 = 0.000 * (I1)$										
Contractor Markup				10.0%	$K1 = 0.100 * (I1+J1)$										
Engineering Design				0.0%	$L1 = 0.000 * (I1+J1+K1)$										
Resident Engineering				2.0%	$M1 = 0.020 * (I1+J1+K1)$										
Contingency				40.0%	$N1 = 0.400 * (I1+J1+K1+L1+M1)$										
				Subtotal (O1) = J1+K1+L1+M1+N1											
				0											
				388,000											
				0											
				88,000											
				1,790,000											
				2,277,000											
				2,085,000											
				11,617,000											
				10,556,000											
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)															

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Table BA.7-2a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 2a: Direct Thermal Desorption (Direct Heating) of Principal Thermal Volume; Access Restrictions (Modifications to PFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Peat Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	470	BCY	1.000	1.000	1.000		100	2,000	1,000
H - Sewer Signs	A	1	30	0.00	/LF	87,000	LF	1.000	1.000	1.000		400	13,000	7,000
H - Long Term Soil Monitoring, Chemical Sewers	A	3	30	29,000.00	/EA-YR	1	EA	1.000	1.000	1.000		33,000	827,000	470,000
HA - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (P)														
												40,000	1,114,000	595,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												18,000	434,000	220,000
Contingency												17,000	465,000	238,000
Subtotal (S = Q+R)														
												32,000	899,000	458,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												72,000	2,013,000	1,053,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													14,900,000	12,800,000

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Table B4.7-3a

Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup

Alternative 3a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	470	BCY	1.000	1.000	1.000		3,000	3,000	3,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	470	BCY	1.000	1.000	1.000		2,000	2,000	2,000
H - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	35,000	BCY	1.000	1.000	1.000		228,000	228,000	218,000
H - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	35,000	BCY	1.000	1.000	1.000		152,000	152,000	138,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	6	BCY	1.000	1.000	1.000		40	40	40
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	6	BCY	1.000	1.000	1.000		30	30	20
Subtotal (A)													385,000	380,000
INDIRECT CAPITAL COSTS														
Mob/Demob	COST CODE: LLSS													
Indirects, Overhead & Profit	3.3%	B = 0.033 * (A)												
Engineering Design	38.0%	C = 0.380 * (A+B)												
Resident Engineering	3.0%	D = 0.030 * (A+B+C)												
Contingency	1.3%	E = 0.013 * (A+B+C)												
	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													343,000	320,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	47,000	BCY	1.000	1.000	1.000		760,000	742,000	
A - Incineration	A	1	2	36.37	/BCY	640	BCY	1.000	1.000	1.000		27,000	26,000	
Subtotal (A1)													787,000	788,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob	COST CODE: C													
Contractor Markup	2.0%	B1 = 0.020 * (A1)												
Engineering Design	10.0%	C1 = 0.100 * (A1+B1)												
Resident Engineering	8.0%	D1 = 0.080 * (A1+B1+C1)												
Contingency	3.0%	E1 = 0.030 * (A1+B1+C1)												
	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													688,000	487,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													2,013,000	1,855,000
HCS-01A.W01														
SOILS DAA														
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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost	Annual Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Sewer Overburden	LS	3	--	1.51	/RCY	340,000	RCY	1.000	1.000	1.000		596,000		531,000
HA - Removal of Steel/Cast Iron Pipe	LS	3	--	20.68	/LF	15,100	LF	1.000	1.000	1.200	Odor Control	428,000		398,000
HA - Excavate Chemical Sewers	LS	3	--	7.25	/RCY	82,000	RCY	1.000	1.000	1.200	Odor Control	814,000		736,000
HA - Transportation of Chemical Sewers to Thermal Desorption Unit	LS	3	--	1.05	/RCY-MILE	47,000	RCY	1.010	0.500	1.000		26,000		26,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/RCY	470	RCY	1.000	1.000	1.000		1,000		1,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/RCY-MILE	470	RCY	1.000	1.000	1.000		1,000		1,000
H - On-Post Hazardous Waste Landfill (Periculates)	LS	3	--	4.07	/RCY	470	RCY	1.000	1.000	1.000		2,000		2,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/RCY	47,000	RCY	1.010	1.000	1.000		60,000		63,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/RCY-MILE	47,000	RCY	1.010	0.500	1.000		23,000		21,000
H - Backfill of Treated Soil for Chemical Sewers	LS	3	--	1.56	/RCY	47,000	RCY	1.010	1.000	1.000		85,000		77,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/RCY-MILE	35,000	RCY	1.010	1.500	1.000		59,000		56,000
H - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/RCY	35,000	RCY	1.010	1.000	1.000		164,000		148,000
H - Excavation of Borrow Material	LS	3	--	1.89	/RCY	35,000	RCY	1.000	1.000	1.000		75,000		68,000
H - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/RCY-MILE	35,000	RCY	1.000	1.500	1.000		52,000		47,000
H - Backfill with Borrow Material	LS	3	--	1.72	/RCY	35,000	RCY	1.000	1.000	1.000		60,000		62,000
H - Backfill of Sewer Overburden	LS	3	--	1.56	/RCY	340,000	RCY	1.000	1.000	1.000		605,000		548,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	100,000	SY	1.000	1.000	1.100	Disturbance	23,000		20,000
A - Agent Screening During Excavation	LS	3	--	0.10	/RCY	64,000	RCY	1.000	1.000	1.000		7,000		7,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/RCY	640	RCY	1.000	1.000	1.200	Odor Control	4,000		4,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/RCY-MILE	640	RCY	1.000	1.500	1.000		1,000		1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/RCY	6	RCY	1.000	1.000	1.000		10		10
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/RCY-MILE	6	RCY	1.000	1.000	1.000		10		10
A - On-Post Hazardous Waste Landfill (Periculates)	LS	3	--	4.07	/RCY	6	RCY	1.000	1.000	1.000		30		30
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/RCY	640	RCY	1.000	1.000	1.000		1,000		1,000
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/RCY-MILE	640	RCY	1.000	1.500	1.000		1,000		1,000
A - Backfill with Treated Soil	LS	3	--	1.72	/RCY	640	RCY	1.000	1.000	1.000		1,000		1,000
Subtotal (I)												3,105,000	2,818,000	
INDIRECT O&M COSTS (OPERATIONS)														
COST CODE: HAMS														
Mob/Demob	5.1%	$J = 0.051 * (I)$												
Indirects, Overhead & Profit	40.3%	$K = 0.403 * (I+J)$												
Engineering Design	1.5%	$L = 0.015 * (I+J+K)$												
Resident Engineering	2.0%	$M = 0.020 * (I+J+K)$												
Contingency	31.5%	$N = 0.315 * (I+J+K+L+M)$												
Subtotal (O) = J+K+L+M+N												3,114,000	2,824,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Saturated Soil)	LS	3	--	73.64	/RCY	47,000	RCY	1.010	1.000	1.000		3,898,000		3,618,000
A - Incineration	LS	3	--	96.24	/RCY	640	RCY	1.000	1.000	1.000		70,000		64,000
Subtotal (II)												4,059,000	3,882,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
COST CODE: D														
Mob/Demob	0.0%	$J1 = 0.000 * (II)$												
Contractor Markup	10.0%	$K1 = 0.100 * (II+J1)$												
Engineering Design	0.0%	$L1 = 0.000 * (II+J1+K1)$												
Resident Engineering	2.0%	$M1 = 0.020 * (II+J1+K1+L1)$												
Contingency	40.0%	$N1 = 0.400 * (II+J1+K1+L1+M1)$												
Subtotal (O1) = J1+K1+L1+M1+N1												2,317,000	2,102,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+II+O1)												12,865,000	11,424,000	
HCS-03A.W01 01/15/03 DAA														

Table B4.7.3a

Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 3a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/RCY-YR	470	RCY	1.000	1.000	1.000		100	2,000	1,000
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/RCY-YR	31,000	RCY	1.000	1.000	1.000		5,000	129,000	65,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/RCY-YR	6	RCY	1.000	1.000	1.000		1	20	10
Subtotal (P)														
													5,000	131,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects: Overhead & Profit 39.0%														
Contingency 30.0%														
													2,000	51,000
													2,000	55,000
													4,000	106,000
													8,000	228,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													14,800,000	13,500,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														

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Table B4.7-8a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/RCY	640	RCY	1.000	1.000	1.000			4,000	4,000
A - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/RCY	640	RCY	1.000	1.000	1.000			3,000	3,000
Subtotal (A)													7,000	7,000
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mod/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (B = B+C+D+E+F)													8,000	8,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Solvent Washing	LS	1	--	28.55	/RCY	31,000	RCY	1.000	1.000	1.000			1,010,000	1,010,000
A - Solvent/Caustic Washing of Agent Soil	LS	1	--	32.55	/RCY	640	RCY	1.000	1.000	1.000			24,000	24,000
Subtotal (A1)													1,034,000	1,034,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: F														
Mod/Demob	5.0%	B1 = 0.050 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	4.5%	D1 = 0.045 * (A1+B1+C1)												
Resident Engineering	2.0%	E1 = 0.020 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													619,000	619,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													1,686,000	1,686,000

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Table B4.7-8a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Sewer Overburden	LS	1	--	1.51	/BCY	340,000	BCY	1.000	1.000	1.000		506,000	506,000	506,000
HA - Removal of Steel/Cast Iron Pipe	LS	1	--	20.68	/LF	15,100	LF	1.000	1.000	1.200	Odor Control	428,000	428,000	428,000
HA - Excavate Chemical Sewers	LS	1	--	7.25	/BCY	82,000	BCY	1.000	1.000	1.200	Odor Control	814,000	814,000	814,000
HA - Transportation of Chemical Sewers to Soil Washing Unit	LS	1	--	1.05	/BCY-MILE	82,000	BCY	1.010	1.500	1.000		148,000	148,000	148,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	1	--	1.28	/BCY	82,000	BCY	1.010	1.000	1.000		121,000	121,000	121,000
H - Transportation of Treated Soil to Backfill Excavation	LS	1	--	0.86	/BCY-MILE	82,000	BCY	1.010	1.500	1.000		122,000	122,000	122,000
HA - Backfill of Treated Soil for Chemical Sewers	LS	1	--	1.56	/BCY	82,000	BCY	1.010	1.000	1.000		147,000	147,000	147,000
H - Backfill of Sewer Overburden	LS	1	--	1.56	/BCY	310,000	BCY	1.000	1.000	1.000		605,000	605,000	605,000
H - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	100,000	SY	1.000	1.000	1.000	Disturbance	23,000	23,000	23,000
A - Agent Screening During Excavation	LS	1	--	0.10	/BCY	64,000	BCY	1.000	1.000	1.000		7,000	7,000	7,000
A - Excavation of Soil with Agent	LS	1	--	4.55	/BCY	640	BCY	1.000	1.000	1.200	Odor Control	4,000	4,000	4,000
A - Transportation of Contaminated Soil to Soil Washing Unit	LS	1	--	1.07	/BCY-MILE	640	BCY	1.000	1.500	1.000		1,000	1,000	1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	1	--	1.55	/BCY	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	1	--	1.07	/BCY-MILE	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - On-Post Hazardous Waste Landfill	LS	1	--	4.07	/BCY	640	BCY	1.000	1.000	1.000		3,000	3,000	3,000
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	1	--	1.28	/BCY	640	BCY	1.000	1.500	1.000		1,000	1,000	1,000
A - Transportation of Treated Soil to Backfill Excavation	LS	1	--	0.86	/BCY-MILE	640	BCY	1.000	1.500	1.000		1,000	1,000	1,000
A - Backfill with Treated Soil	LS	1	--	1.72	/BCY	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000
Subtotal (I)													3,016,000	3,016,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				5.1%	J = 0.051 * (I)								155,000	155,000
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)								1,276,000	1,276,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)								67,000	67,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)								89,000	89,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)								1,438,000	1,438,000
Subtotal (O) = J+K+L+M+N													3,024,000	3,024,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Solvent Washing	LS	1	--	118.53	/BCY	82,000	BCY	1.010	1.000	1.000		11,202,000	11,202,000	11,202,000
A - Solvent/Caustic Washing of Agent Soil	LS	1	--	248.53	/BCY	640	BCY	1.000	1.000	1.000		162,000	162,000	162,000
Subtotal (H)													11,364,000	11,364,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				5.0%	J1 = 0.050 * (H)								569,000	569,000
Contractor Markup				10.0%	K1 = 0.100 * (H+J1)								1,195,000	1,195,000
Engineering Design				0.0%	L1 = 0.000 * (H+J1+K1)								0	0
Resident Engineering				2.0%	M1 = 0.020 * (H+J1+K1)								283,000	283,000
Contingency				30.0%	N1 = 0.300 * (H+J1+K1+L1+M1)								4,023,000	4,023,000
Subtotal (O1) = J1+K1+L1+M1+N1													6,051,000	6,051,000
TOTAL O&M COSTS (OPERATIONS) (OO) = I+O+O1+H													23,475,000	23,475,000

Table B4.7-8a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 8a: Direct Soil Washing (Solvent Washing)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On-Peat Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	640	BCY	1.000	1.000	1.000		100	3,000	1,000
Subtotal (P)														
												100	3,000	1,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: L1.SL														
Indirects, Overhead & Profit Q = 0.380 * (P)														
Contingency R = 0.300 * (P+Q)														
												40	1,000	1,000
												40	1,000	1,000
Subtotal (S = Q+R)														
												100	2,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												200	5,000	3,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													25,100,000	25,100,000

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Table BA.7-13a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost	PW Cost	
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	2	--	5.72	/BCY	820	BCY	1.000	1.000	1.000	1.000	5,000	5,000	5,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	820	BCY	1.000	1.000	1.000	1.000	4,000	3,000	3,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	2	--	5.72	/BCY	6	BCY	1.000	1.000	1.000	1.000	40	40	40
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	6	BCY	1.000	1.000	1.000	1.000	30	20	20
Subtotal (A)													8,000	8,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit	COST CODE: ILSS													
Engineering Design	3.3%	B = 0.033 * (A)												
Resident Engineering	39.0%	C = 0.390 * (A+B)												
Contingency	3.0%	D = 0.030 * (A+B+C)												
	1.3%	E = 0.013 * (A+B+C)												
	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													8,000	7,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Description (Saturated Soil)	A	1	2	14.17	/BCY	31,000	BCY	1.000	1.000	1.000	1.000	501,000	488,000	488,000
A - Incineration	A	1	2	36.37	/BCY	640	BCY	1.000	1.000	1.000	1.000	27,000	26,000	26,000
Subtotal (A1)													528,000	515,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup	2.0%	B1 = 0.020 * (A1)												
Engineering Design	10.0%	C1 = 0.100 * (A1+B1)												
Resident Engineering	9.0%	D1 = 0.090 * (A1+B1+C1)												
Contingency	3.0%	E1 = 0.030 * (A1+B1+C1)												
	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													334,000	328,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													879,000	858,000
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
H - Excavation of Sewer Overburden	LS	3	--	1.51	/BCY	340,000	BCY	1.000	1.000	1.000		508,000	508,000	531,000	
HA - Removal of Steel/Cast Iron Pipe	LS	3	--	20.68	/LF	15,100	LF	1.000	1.000	1.200	Older Control	428,000	398,000	736,000	
HA - Excavate Chemical Sewers	LS	3	--	7.25	/BCY	82,000	BCY	1.000	1.000	1.200	Older Control	814,000	736,000	135,000	
HA - Transportation of Chemical Sewers to Thermal Destruction Unit	LS	3	--	1.05	/BCY-MILE	82,000	BCY	1.010	1.300	1.000		149,000	1,000	1,000	
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	820	BCY	1.000	1.000	1.000		1,000	1,000	1,000	
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	820	BCY	1.000	1.000	1.000		1,000	1,000	1,000	
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	820	BCY	1.000	1.000	1.000		4,000	3,000	3,000	
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	82,000	BCY	1.010	1.300	1.000		181,000	165,000	165,000	
H - Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	0.86	/BCY-MILE	82,000	BCY	1.010	1.300	1.000		111,000	122,000	134,000	
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	1.56	/BCY	82,000	BCY	1.010	1.000	1.000		147,000	605,000	548,000	
HA - Backfill of Treated Soil for Chemical Sewers	LS	3	--	1.36	/BCY	340,000	BCY	1.000	1.000	1.000	Disturbance	23,000	20,000	20,000	
H - Backfill of Sewer Overburden	LS	3	--	0.18	/SY	100,000	SY	1.000	1.000	1.100		7,000	7,000	4,000	
H - Revegetation of Disturbed Areas	LS	2	--	0.10	/BCY	64,000	BCY	1.000	1.000	1.000	Older Control	4,000	1,000	1,000	
A - Agent Screening During Excavation	LS	3	--	4.55	/BCY	640	BCY	1.000	1.000	1.200		4,000	4,000	4,000	
A - Excavation of Soil with Agrav	LS	3	--	1.07	/BCY-MILE	640	BCY	1.000	1.300	1.000		1,000	1,000	1,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.55	/BCY	6	BCY	1.000	1.000	1.000		10	10	10	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.07	/BCY-MILE	6	BCY	1.000	1.000	1.000		30	30	30	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	6	BCY	1.000	1.000	1.000		1,000	1,000	1,000	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	640	BCY	1.000	1.300	1.000		1,000	1,000	1,000	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	640	BCY	1.000	1.300	1.000		1,000	1,000	1,000	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000	
Subtotal (I)													3,078,000	2,792,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				5.1%	J = 0.051 * (I)								156,000	143,000	
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)								1,302,000	1,181,000	
Engineering Design				1.5%	L = 0.015 * (I+J+K)								88,000	82,000	
Resident Engineering				2.0%	M = 0.020 * (I+J+K)								81,000	82,000	
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)								1,468,000	1,331,000	
Subtotal (D = J+K+L+M+N)													3,086,000	2,800,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Thermal Destruction (Saturated Soil)	LS	3	--	73.64	/BCY	82,000	BCY	1.010	1.000	1.000		6,980,000	6,313,000	6,313,000	
A - Incineration	LS	3	--	96.24	/BCY	640	BCY	1.000	1.000	1.000		70,000	64,000	64,000	
Subtotal (H)													7,050,000	6,377,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mob/Demob				0.0%	J1 = 0.000 * (H)							0	0	0	
Contractor Markup				10.0%	K1 = 0.100 * (H+J1)							703,000	639,000	639,000	
Engineering Design				0.0%	L1 = 0.000 * (H+J1+K1)							0	0	0	
Resident Engineering				2.0%	M1 = 0.020 * (H+J1+K1)							155,000	140,000	140,000	
Contingency				40.0%	N1 = 0.400 * (H+J1+K1+L1+M1)							3,155,000	2,862,000	2,862,000	
Subtotal (O1 = J1+K1+L1+M1+N1)													4,013,000	3,640,000	
TOTAL O&M COSTS (OPERATIONS) [OO = I+H+O1+O1]													17,207,000	15,808,000	15,808,000

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Table B4.7-13a Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	820	BCY	1.000	1.000	1.000		100	3,000	2,000
A - On Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	6	BCY	1.000	1.000	1.000		1	20	10
Subtotal (P)														
												100	3,000	2,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects: Overhead & Profit												50	1,000	1,000
Contingency												100	1,000	1,000
Subtotal (S = Q+R)														
												100	3,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (I = P+S)														
												200	6,000	3,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+I)														
													18,100,000	16,500,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	190,000	SY	1.000	1.000	1.000		0	0	0
B - No Action	LS	1	--	0.00	/SY	160,000	SY	1.000	1.000	1.000		0	0	0
A - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000		0	0	0
U - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (A)												0	0	0
INDIRECT CAPITAL COSTS														
Mod/Demob	LLSS													
Indirects, Overhead & Profit												0	0	0
Engineering Design												0	0	0
Resident Engineering												0	0	0
Contingency												0	0	0
Subtotal (G =B+C+D+E+F)												0	0	0
TOTAL CAPITAL COSTS (H = A+G)												0	0	0

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Table B4.8-1 Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	190,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	160,000	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000			0	0
U - No Action	LS	1	--	0.00	/SY	370,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Site Monitoring, Complex Disposal Trenches	A	1	30	75,000.00	/EA-YR	1	EA	1.000	1.000	1.000		86,000	2,568,000	1,361,000
HB AU - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												92,000	2,752,000	1,459,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												166,000	4,974,000	2,638,000
												4,970,000	2,640,000	

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Table B4.8-5b Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 5b: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cont. Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Long Term Dewatering, Complex Trenches	LS	2	--	280,740.00	/EA	1	EA	1.000	1.000	1.000		320,000	320,000	305,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	7	BCY	1.000	1.000	1.000		50	50	40
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	3.80	/BCY	7	BCY	1.000	1.000	1.000		30	30	30
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	91,000	BCY	1.000	1.000	1.000		448,000	448,000	427,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	4	--	3.70	/BCY	91,000	BCY	1.000	1.000	1.000		364,000	364,000	332,000
Subtotal (A)													1,153,000	1,084,000
INDIRECT CAPITAL COSTS														
COST CODE: M/SS														
Mod/Demob	4.5%	B = 0.045 * (A)												
Indirects, Overhead & Profit	40.3%	C = 0.403 * (A+B)												
Engineering Design	4.5%	D = 0.045 * (A+B+C)												
Resident Engineering	1.8%	E = 0.018 * (A+B+C)												
Contingency	28.8%	F = 0.288 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,159,000	1,070,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	170	BCY	1.000	1.000	1.000		7,000	7,000	7,000
Subtotal (A1)													7,000	7,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mod/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													4,000	4,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													2,324,000	2,145,000

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Table B4.8-5b Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 3b: Caps/Covers (Clay/Soil Cap): Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1993 (\$)	1993 (\$)
DIRECT O&M COSTS (OPERATIONS)													
H - Slurry Wall (20 - 65 R Deep)	A	3	4	47.22	27,100	SV	1.000	1.000	1.000		1,460,000	1,283,000	
HB - Soil Excavation	A	3	4	3.91	70,000	BCY	1.000	1.000	1.000		375,000	332,000	
HR - Grade Filling w/Consolidated Soil Prior to Capping	A	3	4	3.63	70,000	BCY	1.000	1.000	1.000		290,000	257,000	
LS - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06	130,000	SV	1.000	1.000	1.000		8,000	8,000	
HI - Grade Filling w/Excav Soil from Slurry Trench Prior to Capping	A	3	4	3.63	27,100	BCY	1.000	1.000	1.000		112,000	98,000	
HAU - Installation of Clay/Soil Cap	A	3	4	23.30	130,000	SV	1.000	1.000	1.000		3,457,000	3,081,000	
HB - Installation of 6 Inches of Topsoil	A	3	4	3.24	240,000	SV	1.000	1.000	1.000		897,000	798,000	
HR - Revegetation of Disturbed Areas	A	3	4	0.18	350,000	SV	1.000	1.000	1.000		79,000	70,000	
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	280,000	SV	1.000	1.000	1.000		1,562,000	1,417,000	
A - Excavation of Soil with Agent	A	3	4	4.55	1,700	BCY	1.000	1.000	1.000		11,000	9,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	A	3	4	1.07	1,700	BCY	1.000	1.000	1.000		2,000	2,000	
A - Load Treated Soil for Transport to Hazardous Landfill	A	3	4	1.55	7	BCY	1.000	1.000	1.000		10	10	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	4.07	7	BCY	1.000	1.000	1.000		30	30	
A - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	1.28	1,700	BCY	1.000	1.000	1.000		2,000	2,000	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	0.86	1,700	BCY	1.000	1.000	1.000		2,000	1,000	
A - Backfill with Treated Soil	A	3	4	1.72	1,700	BCY	1.000	1.000	1.000		3,000	3,000	
U - UXO Clearance by Geophysics	LS	2	--	0.85	280,000	SV	1.000	1.000	1.000		272,000	258,000	
U - Removal of Soil with UXO	A	3	4	70.57	1,700	BCY	1.000	1.000	1.000		137,000	121,000	
U - Excavation of Debris from Surface Soil	A	3	4	3.91	17,000	BCY	1.000	1.000	1.000		99,000	87,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	A	3	4	0.71	17,000	BCY	1.000	0.750	1.300	Productivity	13,000	12,000	
U - On-Post Solid Waste Landfill	A	3	4	4.07	17,000	BCY	1.000	1.000	1.000		78,000	70,000	
Subtotal (I)											8,651,000	7,890,000	
INDIRECT O&M COSTS (OPERATIONS)													
Mob/Demob				5.1%							454,000	404,000	
Indirects				40.3%							3,745,000	3,338,000	
Engineering Design				1.5%							198,000	174,000	
Resident Engineering				2.0%							261,000	233,000	
Contingency				31.5%							4,221,000	3,762,000	
Subtotal (O) = J+K+L+M+N											8,877,000	7,812,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
A - Incineration	A	3	4	96.24	1,700	BCY	1.000	1.000	1.000		187,000	165,000	
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	A	3	4	2,200.00	1,700	BCY	1.000	1.000	1.000		4,268,000	3,779,000	
Subtotal (I)											4,455,000	3,944,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mob/Demob				0.0%							0	0	
Contractor Markup				10.0%							445,000	394,000	
Engineering Design				0.0%							0	0	
Resident Engineering				2.0%							98,000	87,000	
Contingency				40.0%							1,999,000	1,770,000	
Subtotal (O) = J+K+L+M+N											2,543,000	2,251,000	
TOTAL O&M COSTS (OPERATIONS) [OO = I+O+H+OT]											24,726,000	21,998,000	

Table B4.8-5b Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 5b: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HIAU - Installation of Clay/Soil Cap	A	4	30	0.80	/SY-YR	130,000	SY	1.000	1.000	1.000		119,000	3,204,000	1,578,000
H - Long-Term De-watering, Complex Trenches	A	4	30	50,214.00	/EA-YR	1	EA	1.000	1.000	1.000		57,000	1,547,000	781,000
HB - Site Reviews	A	4	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	168,000	82,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/RCY-YR	7	RCY	1.000	1.000	1.000		1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	4	30	0.13	/RCY-YR	17,000	RCY	1.000	1.000	1.000		3,000	88,000	33,000
Subtotal (P)												185,000	4,898,000	2,453,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	COST CODE: LLSL													
Contingency	Q = 0.390 * (P) R = 0.300 * (P+Q) Subtotal (S = Q+R)													
												72,000	1,945,000	857,000
												77,000	2,079,000	1,023,000
												149,000	4,024,000	1,879,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												334,000	9,010,000	4,432,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O&M+T)												36,100,000	28,600,000	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Mileage		Other	Description	1995 (\$)		PW Cost
								Factor	Factor			Annual Cost	Total Cost	
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Complex Trenches	LS	1	--	186,463.00	/EA	1	EA	1,000	1,000	1,000		213,000		19,953,000
H - Complex Trench Excavation Including Vapor Controls	LS	2	--	12,396,000.00	/EA	1	EA	1,000	1,000	1,000		14,146,000		13,472,000
H - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	470,000	BCY	1,000	1,000	1,000		3,088,000		2,922,000
H - On-Post Hazardous Waste Landfill Closure	LS	8	--	3.80	/BCY	470,000	BCY	1,000	1,000	1,000		2,008,000		1,448,000
B - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	390	BCY	1,000	1,000	1,000		3,000		2,000
B - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	8	--	3.80	/BCY	390	BCY	1,000	1,000	1,000		2,000		1,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	12	BCY	1,000	1,000	1,000		100		100
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	8	--	3.80	/BCY	12	BCY	1,000	1,000	1,000		100		40
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	120,000	BCY	1,000	1,000	1,000		582,000		563,000
U - On-Post Solid Waste Landfill Closure and Post Closure Activities	LS	8	--	3.70	/BCY	120,000	BCY	1,000	1,000	1,000		507,000		380,000
Subtotal (A)													20,587,000	18,883,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)													787,000	736,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Incineration	A	1	2	36.37	/BCY	470,000	BCY	1,000	1,000	1,000		19,507,000		19,043,000
B - Thermal Description (Dry Slat)	A	1	2	14.17	/BCY	39,000	BCY	1,000	1,000	1,000		631,000		618,000
A - Incineration	A	1	2	36.37	/BCY	1,200	BCY	1,000	1,000	1,000		50,000		48,000
Subtotal (A1)													20,187,000	19,707,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob														
Contractor Markup														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B1)													404,000	394,000
Subtotal (G1 = B1+C1+D1+E1+F1)													12,791,000	12,487,000
TOTAL CAPITAL COSTS (H = A+G; A1+G1)													72,382,000	68,570,000

Table B4.8-14 Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Excavation Dewatering, Complex Trenches	A	1	8	310,752.00	/EA-YR		1	EA	1.000	1.000	1.200		3,404,000	3,404,000		2,868,000
H - Complex Trench Excavation Including Vapor Controls	A	3	8	107.35	/BCY		470,000	BCY	1.000	1.000	1.560	Older Control, Productivity	69,620,000	69,620,000		72,365,000
H - Transportation of Contaminated Soil to On-Post Incineration Facility	A	3	8	1.07	/BCY-MILE		470,000	BCY	1.000	1.000	1.300	Productivity	746,000	746,000		601,000
H - Land Treated Soil for Transport to Hazardous Landfill	A	3	8	1.55	/BCY		470,000	BCY	1.000	1.000	1.000		631,000	631,000		670,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste L	A	3	8	1.07	/BCY-MILE		470,000	BCY	1.000	0.500	1.300	Productivity	373,000	373,000		301,000
H - On-Post Hazardous Waste Landfill	A	3	8	4.07	/BCY		470,000	BCY	1.000	1.000	1.000		2,183,000	2,183,000		1,759,000
H - Excavation of Borrow Material	A	3	8	1.89	/BCY		470,000	BCY	1.000	1.000	1.000		1,014,000	1,014,000		817,000
H - Transportation of Borrow Material to Backfill Area	A	3	8	0.86	/BCY-MILE		470,000	BCY	1.000	1.000	1.000		682,000	682,000		557,000
H - Backfill with Borrow Material	A	3	8	1.72	/BCY		470,000	BCY	1.000	1.000	1.000	Older Control	823,000	823,000		743,000
B - Soil Excavation	A	3	8	3.91	/BCY		39,000	BCY	1.000	1.000	1.200		209,000	209,000		166,000
B - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	8	1.07	/BCY-MILE		39,000	BCY	1.000	1.000	1.000		71,000	71,000		56,000
B - Load Treated Soil for Transport to Hazardous Landfill	A	3	8	1.55	/BCY		39,000	BCY	1.000	1.000	1.000		1,000	1,000		400
B - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	8	1.07	/BCY-MILE		39,000	BCY	1.000	1.000	1.000		2,000	2,000		1,000
B - On-Post Hazardous Waste Landfill (Particulates)	A	3	8	4.07	/BCY		39,000	BCY	1.000	1.000	1.000		57,000	57,000		46,000
B - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	8	0.86	/BCY-MILE		39,000	BCY	1.000	1.000	1.000		36,000	36,000		31,000
B - Transportation of Treated Soil to Backfill Excavation	A	3	8	1.72	/BCY		39,000	BCY	1.000	1.000	1.000		77,000	77,000		62,000
B - Backfill with Treated Soil	A	3	8	3.24	/SY		330,000	SY	1.000	1.000	1.000	Disturbance	1,284,000	1,284,000		1,043,000
HB - Installation of 6 inches of Topsoil	A	3	8	0.18	/SY		330,000	SY	1.000	1.000	1.000		76,000	76,000		64,000
HR - Revegetation of Disturbed Areas	A	3	8	0.10	/SY		330,000	SY	1.000	1.000	1.000		54,000	54,000		43,000
A - Agent Seeding During Excavation	A	3	8	4.55	/BCY		470,000	BCY	1.000	1.000	1.000	Older Control	7,000	7,000		6,000
A - Excavation of Soil with Agent	A	3	8	1.07	/BCY-MILE		1,200	BCY	1.000	1.000	1.000		1,000	1,000		20
A - Transportation of Contaminated Soil to On-Post Incineration Facility	A	3	8	1.55	/BCY		12	BCY	1.000	1.000	1.000		10	10		40
A - Load Treated Soil for Transport to Hazardous Landfill	A	3	8	4.07	/BCY		12	BCY	1.000	1.000	1.000		2,000	2,000		1,000
A - On-Post Hazardous Waste Landfill (Particulates)	A	3	8	1.28	/BCY		1,200	BCY	1.000	1.000	1.000		1,000	1,000		1,000
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	8	0.86	/BCY-MILE		1,200	BCY	1.000	1.000	1.000		2,000	2,000		2,000
A - Transportation of Treated Soil to Backfill Excavation	A	3	8	1.72	/BCY		1,200	BCY	1.000	1.000	1.000		369,000	369,000		297,000
A - Backfill with Treated Soil	A	3	8	0.85	/SY		370,000	SY	1.000	1.000	1.000		87,000	87,000		78,000
U - UXO Clearance by Geophysics	A	3	8	70.57	/BCY		1,200	BCY	1.000	1.000	1.000		696,000	696,000		561,000
U - Removal of Soil with UXO	A	3	8	3.91	/BCY		120,000	BCY	1.000	1.000	1.300	Productivity	95,000	95,000		76,000
U - Excavation of Debris from Surface Soil	A	3	8	0.71	/BCY-MILE		120,000	BCY	1.000	0.750	1.300		557,000	557,000		449,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste La	A	3	8	4.07	/BCY		120,000	BCY	1.000	1.000	1.000		103,698,000	103,698,000		83,699,000
U - On-Post Solid Waste Landfill	A	3	8										5,314,000	5,314,000		4,289,000
													42,510,000	42,510,000		34,311,000
													2,273,000	2,273,000		1,834,000
													3,408,000	3,408,000		2,752,000
													51,087,000	51,087,000		41,234,000
Subtotal (I)													104,592,000	104,592,000		84,421,000
INDIRECT O&M COSTS (OPERATIONS)																
Mod/Demob																
Indirects - Overhead & Profit																
Engineering Design																
Resident Engineering																
Contingency																
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
H - Incineration	A	3	8	96.24	/BCY		470,000	BCY	1.000	1.000	1.000		51,618,000	51,618,000		41,567,000
B - Thermal Desorption (Dry Soil)	A	3	8	49.13	/BCY		39,000	BCY	1.000	1.000	1.000		2,187,000	2,187,000		1,762,000
A - Incineration	A	3	8	96.24	/BCY		1,200	BCY	1.000	1.000	1.000		132,000	132,000		106,000
U - Packaging and Transportation of Agent UXO to Army Off-Post UX	A	3	8	2,200.00	/BCY		1,200	BCY	1.000	1.000	1.000		3,013,000	3,013,000		2,427,000
Subtotal (II)													56,949,000	56,949,000		45,862,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mod/Demob																
Contractor Markup																
Engineering Design																
Resident Engineering																
Contingency																
TOTAL O&M COSTS (OPERATIONS) (I+II)													297,734,000	297,734,000		240,181,000

Table B4.8-14 Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1993 (\$)	1993 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
H - On-Post Hazardous Waste Landfill Closure	A	8	30		0.13	/RCY-YR	470,000	RCY	1.000	1.000	1.000		70,000	1,804,000		702,000
B - On-Post Hazardous Waste Landfill Closure (Particulates)	A	8	30		0.13	/RCY-YR	390	RCY	1.000	1.000	1.000		100	1,000		1,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	8	30		0.13	/RCY-YR	12	RCY	1.000	1.000	1.000		2	40		20
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	8	30		0.13	/RCY-YR	120,000	RCY	1.000	1.000	1.000		16,000	409,000		179,000
Subtotal (P)																
													96,000	2,015,000		982,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
INDIRECTS, OVERHEAD & PROFIT																
Contingency																
Subtotal (S = Q+R)																
													34,000	768,000		344,000
													37,000	840,000		388,000
													71,000	1,628,000		711,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																
													159,000	3,640,000		1,593,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)																
														374,000,000		310,000,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
H - No Action	LS	1	--	0.00	32,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (A)												0	0
INDIRECT CAPITAL COSTS													
Mod/Demob													
Indirects, Overhead & Profit													
Engineering Design													
Resident Engineering													
Contingency													
Subtotal (G-B+C+D+E+F)												0	0
TOTAL CAPITAL COSTS (H+A+G)												0	0

Table B4.9-1 Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	32,000	SV	1,000	1,000	1,000	1,000	0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
COST CODE														
J = 0.033 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.013 * (I+J+K+L)														
N = 0.283 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Maintenance of Existing Soil Cover	A	1	30	0.33	/SY-YR	32,000	SV	1,000	1,000	1,000	1,000	12,000	362,000	192,000
H - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	6,000	185,000	96,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)														
COST CODE														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
Subtotal (S)														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
HST-01, W01														
SOILS DAA														

Table B4.9.3a Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 5a: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1997 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS																
H - Long-Term Dewatering, Shell Trenches	LS	1	--	161,808.00	/EA		1		1.000	1.000	1.000		165,000			165,000
INDIRECT CAPITAL COSTS																
Subtotal (A)																
INDIRECT CAPITAL COSTS																
Mod/Demob																
Indirects - Overhead & Profit																
Engineering Design																
Resident Engineering																
Contingency																
Subtotal (B) = A + C + D + E + F																
TOTAL CAPITAL COSTS (H + A + G)																
													165,000	8,000	8,000	165,000
													165,000	76,000	76,000	165,000
													165,000	12,000	12,000	165,000
													165,000	5,000	5,000	165,000
													165,000	83,000	83,000	165,000
													165,000	188,000	188,000	165,000
													165,000	370,000	370,000	165,000

Table B4.9-5a Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 5a: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Slurry Wall (20 - 65 ft Deep)	LS	1	--	47.22	/SY	6,700	SY	1.000	1.000	1.000			381,000	381,000
H - Grade Filling w/Excav Soil from Slurry Trench Prior to Capping	LS	1	--	3.63	/BCY	6,700	BCY	1.000	1.000	1.000			26,000	26,000
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	32,000	SY	1.000	1.000	1.000			2,000	2,000
H - Modification of Existing Soil Cover	LS	1	--	22.80	/SY	32,000	SY	1.000	1.000	1.000			833,000	833,000
H - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	32,000	SY	1.000	1.000	1.100	Disturbance		7,000	7,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob													1,231,000	1,231,000
Indirects, Overhead & Profit													48,000	48,000
Engineering Design													515,000	515,000
Resident Engineering													9,000	9,000
Contingency													27,000	27,000
													503,000	503,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Modification of Existing Soil Cover	A	2	30	0.80	/SY-YR	32,000	SY	1.000	1.000	1.000		29,000	847,000	442,000
H - Long-Term Dewatering, Shell Trenches	A	2	30	91.61	/EA-YR	1	EA	1.000	1.000	1.000		107,000	3,086,000	1,817,000
H - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		8,000	179,000	83,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													1,42,000	4,124,000
Contingency													55,000	1,808,000
													58,000	1,720,000
													115,000	3,328,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													257,000	9,784,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													10,200,000	6,590,000

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Table B4.9-14 Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Shell Trenches	LS	1	--	172,685.00	/EA	1	EA	1.000	1.000	1.000			187,000	187,000
H - Shell Trench Excavation Including Vapor Controls	LS	2	--	9,988,750.00	/EA	1	EA	1.000	1.000	1.000			11,389,000	10,856,000
H - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/RCY	100,000	RCY	1.000	1.000	1.000			653,000	622,000
H - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/RCY	100,000	RCY	1.000	1.000	1.000			434,000	413,000
Subtotal (A)												12,662,000	12,662,000	12,662,000
INDIRECT CAPITAL COSTS														
Mod/Demob														
COSS CODE: LMMS														
Indirects, Overhead & Profit													481,000	488,000
Engineering Design													4,973,000	4,740,000
Resident Engineering													817,000	778,000
Contingency													272,000	259,000
													5,280,000	5,042,000
Subtotal (B = B+C+D+E+F)												11,843,000	11,288,000	11,288,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Incineration	A	1	2	36.37	/RCY	100,000	RCY	1.000	1.000	1.000			4,150,000	4,052,000
Subtotal (A1)												4,150,000	4,052,000	4,052,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mod/Demob														
COSS CODE: C														
Contractor Markup													83,000	81,000
Engineering Design													423,000	413,000
Resident Engineering													419,000	408,000
Contingency													140,000	138,000
													1,565,000	1,527,000
Subtotal (G1 = B1+C1+D1+E1+F1)												2,630,000	2,567,000	2,567,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												31,308,000	29,994,000	29,994,000

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Table B4.9-14 Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation Dewatering Shell Trenches	A	1	3	452,612.00	/EA-YR	1	EA	1.000	1.000	1.000		1,550,000	1,550,000	1,477,000
H - Excavation of Cover Overburden	LS	2	-	1.89	/BCY	31,000	BCY	1.000	1.000	1.000		67,000	67,000	64,000
H - Shell Trench Excavation Including Vapor Controls	LS	3	-	88.42	/BCY	100,000	BCY	1.000	1.000	1.000		10,000,000	10,000,000	9,152,000
H - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	-	1.07	/BCY-MILE	100,000	BCY	1.000	1.000	1.300	Productivity	159,000	159,000	144,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	-	1.55	/BCY	100,000	BCY	1.000	1.000	1.000		177,000	177,000	160,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	-	1.07	/BCY-MILE	100,000	BCY	1.000	1.000	1.300	Productivity	159,000	159,000	144,000
H - On-Post Hazardous Waste Landfill	LS	3	-	4.07	/BCY	100,000	BCY	1.000	1.000	1.000		464,000	464,000	421,000
H - Excavation of Borrow Material	LS	3	-	1.89	/BCY	100,000	BCY	1.000	1.000	1.000		216,000	216,000	196,000
H - Transportation of Borrow Material to Backfill Area	LS	3	-	0.86	/BCY-MILE	100,000	BCY	1.000	1.500	1.000		147,000	147,000	134,000
H - Backfill with Borrow Material	LS	3	-	1.72	/BCY	100,000	BCY	1.000	1.000	1.000		186,000	186,000	178,000
H - Backfill of Cover Overburden	LS	3	-	1.72	/BCY	31,000	BCY	1.000	1.000	1.000		61,000	61,000	55,000
H - Revegetation of Disturbed Areas	LS	3	-	0.18	/SY	32,000	SY	1.000	1.000	1.100	Disturbance	7,000	7,000	7,000
Subtotal (I)												13,283,000	13,283,000	12,131,000
INDIRECT O&M COSTS (OPERATIONS)														
Mobile/Demob				5.1%	J = 0.051 * (I)							681,000	681,000	622,000
Indirects, Overhead & Profit				39.0%	K = 0.390 * (I+J)							5,450,000	5,450,000	4,974,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							291,000	291,000	266,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							368,000	368,000	355,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)							6,282,000	6,282,000	5,733,000
Subtotal (O) = J+K+L+M+N												13,083,000	13,083,000	11,849,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Incineration	LS	3	-	96.24	/BCY	100,000	BCY	1.000	1.000	1.000		10,983,000	10,983,000	9,882,000
Subtotal (I1)												10,983,000	10,983,000	9,882,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mobile/Demob				0.0%	J1 = 0.000 * (I1)							0	0	0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							1,098,000	1,098,000	988,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0	0	0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							242,000	242,000	218,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							4,929,000	4,929,000	4,471,000
Subtotal (O1) = J1+K1+L1+M1+N1												6,269,000	6,269,000	5,686,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												43,637,000	43,637,000	39,729,000

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Table B4.9-14 Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1993 (\$)	1993 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	100,000	BCY	1.000	1.000	1.000		15,000	415,000	210,000	
Subtotal (P)															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
COST CODE: LLSL															
Indirects, Overhead & Profit															
Contingency															
Q = 0.380 * (P)															
R = 0.300 * (P+Q)															
Subtotal (S = Q+R)															
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)															
													75,700,000	70,100,000	

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Table BA.10-1 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS															
H. No Action	LS	1	--	0.00	SY	1,000	SY	1,000	1,000	1,000			0	0	0
Subtotal (A)															
INDIRECT CAPITAL COSTS															
Mob/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (B) = 0.003 * (A)															
Subtotal (C) = 0.390 * (A+B)															
Subtotal (D) = 0.030 * (A+B+C)															
Subtotal (E) = 0.013 * (A+B+C)															
Subtotal (F) = 0.283 * (A+B+C+D+E)															
Subtotal (G) = 0.003 * (A+B+C+D+E+F)															
TOTAL CAPITAL COSTS (H) = A+G															
HXP-01 W01													0	0	0
SOILS DAA															

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Table B4.10-1 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 1: No Additional Action (Provisions of F/A)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	1,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	Subtotal (I)													
Indirects, Overhead & Profit	COST CODE													
Engineering Design	J = 0.003 * (I)													
Resident Engineering	K = 0.360 * (I+J)													
Contingency	L = 0.005 * (I+J+K)													
	M = 0.013 * (I+J+K)													
	N = 0.263 * (I+J+K+L+M)													
	Subtotal (O = J+K+L+M+N)													
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	96,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	Subtotal (P)													
Contingency	COST CODE													
	Q = 0.360 * (P)													
	R = 0.300 * (P+Q)													
	Subtotal (S)													
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												11,000	334,000	177,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													334,000	177,000
HXP-01 W01														
SOILS DAA														
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Table B4.10-5

Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 5: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H. Installation of Hydraulic Controls, Hex Pits	LS	1	-	709,171.00	/EA	1	EA	1.000	1.000	1.000		809,000	809,000	809,000
INDIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE														
MMSS														
B = 0.045 * (A)														
4.5%														
C = 0.403 * (A+B)														
40.3%														
D = 0.045 * (A+B+C)														
4.5%														
E = 0.018 * (A+B+C)														
1.8%														
F = 0.288 * (A+B+C+D+E)														
28.8%														
Subtotal (G = B+C+D+E+F)														
813,000														
TOTAL CAPITAL COSTS (H = A+G)														
1,622,000														

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Table B4.10-5 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 5: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Slurry Wall (20 - 65 ft Deep)	LS	1	--	47.22	/SY	1,400	SV	1,000	1,000	1,000	1,000	75,000	75,000	75,000
H - Grade Filling w/Excav Soil from Slurry Trench Prior to Capping	LS	1	--	3.63	/BCY	1,400	BCY	1,000	1,000	1,000	1,000	8,000	8,000	8,000
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	1,000	SV	1,000	1,000	1,000	1,000	100	100	100
H - Installation of Clay/Soil Cap	LS	1	--	23.40	/SY	1,000	SV	1,000	1,000	1,000	1,000	27,000	27,000	27,000
H - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	1,000	SV	1,000	1,000	1,100	Disturbance	200	200	200
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													108,000	108,000
Indirects: Overhead & Profit													4,000	4,000
Engineering Design													45,000	45,000
Resident Engineering													1,000	1,000
Contingency													2,000	2,000
													44,000	44,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Installation of Clay/Soil Cap	A	2	30	0.80	/SY-YR	1,000	SV	1,000	1,000	1,000	1,000	1,000	28,000	14,000
H - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	6,000	179,000	83,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects: Overhead & Profit													3,000	42,000
Contingency													3,000	45,000
													6,000	87,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													7,000	205,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													13,000	579,000
													2,200,000	2,020,000

HXP-05.W01
SOILS DAA

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Table B4.10-14 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
H - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/RCY	3,300	RCY	1.000	1.000	1.000			22,000	21,000		
H - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/RCY	3,300	RCY	1.000	1.000	1.000			14,000	14,000		
H - Hex Pit Excavation Including Vapor Controls	LS	2	--	499,437.00	/EA	1	EA	1.000	1.000	1.000			570,000	543,000		
Subtotal (A)													608,000	577,000		
INDIRECT CAPITAL COSTS																
COST CODE: LMSS																
Mob/Demob	3.9%	B = 0.038 * (A)													23,000	22,000
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)													245,000	234,000
Engineering Design	4.5%	D = 0.045 * (A+B+C)													38,000	37,000
Resident Engineering	1.5%	E = 0.015 * (A+B+C)													13,000	12,000
Contingency	27.5%	F = 0.275 * (A+B+C+D+E)													255,000	243,000
Subtotal (G = B+C+D+E+F)													576,000	549,000		
DIRECT SUBCONTRACT CAPITAL COSTS																
H - Incineration	A	1	2	36.17	/RCY	3,300	RCY	1.000	1.000	1.000			137,000	134,000		
Subtotal (A1)													137,000	134,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mob/Demob	2.0%	B1 = 0.020 * (A1)													3,000	3,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													14,000	14,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													14,000	14,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													5,000	5,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													52,000	50,000
Subtotal (G1 = B1+C1+D1+E1+F1)													87,000	85,000		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													1,408,000	1,344,000		

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Table B4.10-14 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Hex Pit Excavation Including Vapor Controls	LS	3	--	100.07	/BCY-MILE	3,300	BCY	1,000	1,000	1,000	Productivity	377,000	377,000	342,000	
H - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	3,300	BCY	1,000	0.500	1,300	Productivity	3,000	3,000	2,000	
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	6,000	6,000	5,000	
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3,300	BCY	1,000	1,000	1,300	Productivity	5,000	5,000	5,000	
H - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	15,000	15,000	14,000	
H - Excavation of Borrow Material	LS	3	--	1.89	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	7,000	7,000	6,000	
H - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	3,300	BCY	1,000	1.500	1,000	Productivity	5,000	5,000	4,000	
H - Backfill with Borrow Material	LS	3	--	1.72	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	8,000	8,000	6,000	
H - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	1,000	SY	1,000	1,000	1,000	Disturbance	4,000	4,000	3,000	
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	1,000	SY	1,000	1,000	1,100	Disturbance	200	200	200	
Subtotal (f)													428,000	428,000	388,000
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob	5.1% J = 0.051 * (f)														
Indirects, Overhead & Profit	41.5% K = 0.415 * (f+J)														
Engineering Design	1.5% L = 0.015 * (f+J+K)														
Resident Engineering	2.0% M = 0.020 * (f+J+K)														
Contingency	31.5% N = 0.313 * (f+J+K+L+M)														
Subtotal (O) = J+K+L+M+N													22,000	22,000	20,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Incineration	LS	3	--	96.24	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	382,000	382,000	328,000	
Subtotal (f)													382,000	382,000	328,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mod/Demob	0.0% J1 = 0.000 * (f1)														
Contractor Markup	10.0% K1 = 0.100 * (f1+J1)														
Engineering Design	0.0% L1 = 0.000 * (f1+J1+K1)														
Resident Engineering	2.0% M1 = 0.020 * (f1+J1+K1)														
Contingency	40.0% N1 = 0.400 * (f1+J1+K1+L1+M1)														
Subtotal (O1) = J1+K1+L1+M1+N1													38,000	38,000	33,000
TOTAL O&M COSTS (OPERATIONS) (OO = f+O+f1+O1)															
													1,455,000	1,455,000	1,301,000

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Table B4.10-14 Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kin), Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	3,300	BCY	1.000	1.000	1.000		500	14,000	7,000
Subtotal (P)													
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: ULSL													
Indirects, Overhead & Profit 30.0% Q = 0.380 * (P)													
Contingency 30.0% R = 0.300 * (P+Q)													
Subtotal (S = Q+R)													
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													
												2,870,000	2,660,000

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Table B4.11-1 Cost Estimate - Sanitary Landfills Medium Group
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
IF - No Action	LS	1	--	0.00	/SY	150,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	3,200	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
SUBTOTAL (A)														
INDIRECT CAPITAL COSTS														
3.3%														
38.0%														
3.0%														
1.3%														
28.3%														
SUBTOTAL (B) = B+C+D+E+F														
TOTAL CAPITAL COSTS (H) = A+G														

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	150,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	3,200	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Sanitary Landfills	A	1	30	35,000.00	/EA-YR	1	EA	1.000	1.000	1.000		40,000	1,188,000	836,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	165,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													16,000	538,000
Contingency													19,000	577,000
TOTAL O&M COSTS (T = I+O+P+S)														
												46,000	1,383,000	733,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												83,000	2,469,000	1,324,000
												2,500,000	1,320,000	

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Table B4.11-2 Cost Estimate - Sanitary Landfills Medium Group
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
II - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000			2,000	2,000
III - Fences	LS	1	--	15.00	/LF	23,000	LF	1.000	1.000	1.000			384,000	384,000
													386,000	386,000
INDIRECT CAPITAL COSTS														
Mod/Demob	LSS													
Indirects, Overhead & Profit	COST CODE													
Engineering Design	B = 0.033 * (A)													
Resident Engineering	C = 0.390 * (A+B)													
Contingency	D = 0.030 * (A+B+C)													
	E = 0.013 * (A+B+C)													
	F = 0.263 * (A+B+C+D+E)													
Subtotal (G) = B+C+D+E+F													13,000	13,000
													159,000	159,000
													17,000	17,000
													7,000	7,000
													155,000	155,000
													351,000	351,000
TOTAL CAPITAL COSTS (H) = A+G													747,000	747,000

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Table B4.11-2 Cost Estimate - Sanitary Landfills Medium Group
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Habitat Modification	A	1	3	0.17	/SY	150,000	SY	1.000	1.000	1.000			29,000	28,000
II - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													46,000	37,000
Indirects, Overhead & Profit													1,000	1,000
Engineering Design													19,000	15,000
Resident Engineering													300	300
Contingency													1,000	1,000
													18,000	14,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Fences	A	2	30	0.75	/LF-YR	23,000	LF	1.000	1.000	1.000		20,000	571,000	288,000
HB - Habitat Modification	A	3	30	0.01	/SY-YR	150,000	SY	1.000	1.000	1.000		1,000	27,000	14,000
HB - Long Term Soil Monitoring, Sanitary Landfills	A	3	30	35,000.00	/EA-YR	1	EA	1.000	1.000	1.000		40,000	1,118,000	567,000
HB - Site Reviews	A	3	30	5,000.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												87,000	1,888,000	968,000
Contingency												28,000	737,000	377,000
												28,000	788,000	403,000
												54,000	1,524,000	780,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												121,000	3,498,000	1,813,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
													4,230,000	2,560,000

Table B4.11-3 Cost Estimate - Sanitary Landfills Medium Group
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	430,000	BCY	1.000	1.000	1.000			2,807,000	2,807,000
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	430,000	BCY	1.000	1.000	1.000			1,965,000	1,776,000
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
													4,671,000	4,583,000
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)														
													152,000	149,000
Subtotal (C)														
													1,821,000	1,768,000
Subtotal (D)														
													83,000	81,000
Subtotal (E)														
													1,818,000	1,794,000
Subtotal (F)														
													4,073,000	3,998,000
TOTAL CAPITAL COSTS (H = A+G)														
													8,745,000	8,578,000

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Table B4.11-3 Cost Estimate - Sanitary Landfills Medium Group
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Landfill Excavation	LS	2	--	3.91	/BCY	430,000	BCY	1.000	1.000	1.300	Productivity	2,375,000		2,375,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	430,000	BCY	1.000	3.000	1.300	Productivity	2,046,000		2,046,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	430,000	BCY	1.000	1.000	1.000		1,987,000		1,987,000
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	430,000	BCY	1.000	1.000	1.000		827,000		827,000
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	430,000	BCY	1.000	1.500	1.000		633,000		633,000
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	430,000	BCY	1.000	1.000	1.000		844,000		844,000
HB - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	130,000	SY	1.000	1.000	1.000		555,000		555,000
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	130,000	SY	1.000	1.000	1.100	Disturbance	34,000		34,000
													9,532,000	8,078,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob													398,000	362,000
Indirects, Overhead & Profit													3,862,000	3,678,000
Engineering Design													68,000	68,000
Resident Engineering													206,000	197,000
Contingency													3,861,000	3,677,000
													8,387,000	7,888,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	430,000	BCY	1.000	1.000	1.000		64,000	1,850,000	888,000
													64,000	1,850,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													25,000	377,000
Contingency													27,000	403,000
													51,000	779,000
													115,000	21,242,000
													30,000,000	27,400,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost		PW Cost
DIRECT CAPITAL COSTS														
H. Installation of Hydraulic Controls, Sanitary Landfills	LS	1	--	1,043,762.00	/EA	1	EA	1.000	1.000	1.000		1,191,000	1,191,000	1,191,000
Subtotal (A)												1,191,000	1,191,000	
INDIRECT CAPITAL COSTS														
Mob/Demob												54,000	54,000	54,000
Indirects, Overhead & Profit												501,000	501,000	501,000
Engineering Design												79,000	79,000	79,000
Resident Engineering												31,000	31,000	31,000
Contingency												533,000	533,000	533,000
Subtotal (G =B+C+D+E+F)												1,197,000	1,197,000	1,197,000
INDIRECT CAPITAL COSTS (H = A/G)												2,398,000	2,398,000	2,398,000

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Table B4.11-13b Cost Estimate - Sanitary Landfills Medium Group
Alternative 13b: Direct Thermal Desorption (Direct Heating): Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Landfill Excavation	LS	3	--	3.91	/BCY	430,000	BCY	1.000	1.000	1.300	Productivity	2,494,000	2,494,000	2,262,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	430,000	BCY	1.000	3.000	1.300	Productivity	2,048,000	2,048,000	1,857,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	430,000	BCY	1.000	1.000	1.000		781,000	781,000	680,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	430,000	BCY	1.000	1.000	1.000		525,000	525,000	476,000
H - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	430,000	BCY	1.000	1.000	1.000		1,897,000	1,897,000	1,811,000
H - Excavation of Borrow Material	LS	3	--	1.89	/BCY	430,000	BCY	1.000	1.000	1.000		827,000	827,000	841,000
H - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	430,000	BCY	1.000	1.500	1.000		633,000	633,000	574,000
H - Backfill with Borrow Material	LS	3	--	1.72	/BCY	430,000	BCY	1.000	1.000	1.000		844,000	844,000	768,000
B - Soil Excavation	LS	3	--	3.91	/BCY	3,200	BCY	1.000	1.000	1.000		14,000	14,000	13,000
B - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	3,200	BCY	1.000	3.000	1.000		12,000	12,000	11,000
B - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	32	BCY	1.000	1.000	1.000		100	100	40
B - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	32	BCY	1.000	1.000	1.000		100	100	100
B - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	3,200	BCY	1.000	1.000	1.000		5,000	5,000	4,000
B - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	3,200	BCY	1.000	3.000	1.000		9,000	9,000	8,000
B - Backfill with Treated Soil	LS	3	--	1.72	/BCY	3,200	BCY	1.000	1.000	1.000		6,000	6,000	6,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	150,000	SY	1.000	1.000	1.000		555,000	555,000	500,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	150,000	SY	1.000	1.000	1.100	Disturbance	34,000	34,000	31,000
Subtotal (I)												10,894,000	10,894,000	9,854,000
INDIRECT O&M COSTS (OPERATIONS)														
				COST CODE: MMMS										
Mod/Demob				4.5%	J = 0.045 * (I)							488,000	488,000	443,000
Indirects, Overhead & Profit				38.0%	K = 0.380 * (I+J)							4,018,000	4,018,000	3,615,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							237,000	237,000	215,000
Resident Engineering				1.8%	M = 0.018 * (I+J+K)							278,000	278,000	250,000
Contingency				28.8%	N = 0.288 * (I+J+K+L+M)							4,684,000	4,684,000	4,249,000
Subtotal (D) = J+K+L+M+N												10,114,000	10,114,000	9,174,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	430,000	BCY	1.000	1.000	1.000		24,108,000	24,108,000	21,867,000
B - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	3,200	BCY	1.000	1.000	1.000		179,000	179,000	163,000
Subtotal (H)												24,288,000	24,288,000	22,030,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
				COST CODE: D										
Mod/Demob				0.0%	J1 = 0.000 * (H)							0	0	0
Contractor Markup				10.0%	K1 = 0.100 * (H+J1)							2,429,000	2,429,000	2,203,000
Engineering Design				0.0%	L1 = 0.000 * (H+J1+K1)							0	0	0
Resident Engineering				2.0%	M1 = 0.020 * (H+J1+K1)							534,000	534,000	485,000
Contingency				40.0%	N1 = 0.400 * (H+J1+K1+L1+M1)							10,900,000	10,900,000	9,867,000
Subtotal (O1) = J1+K1+L1+M1+N1												13,863,000	13,863,000	12,574,000
TOTAL O&M COSTS (OPERATIONS) (DO = I+O1+H+SO1)												59,129,000	59,129,000	53,632,000

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Table B4.11-13b Cost Estimate - Sanitary Landfills Medium Group
Alternative 13b: Direct Thermal Desorption (Direct Heating); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure	A	4	30	0.13	/BCY-YR	330,000	BCY	1,000	1,000	1,000		49,000	1,322,000	660,000
B - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	32	BCY	1,000	1,000	1,000		5	100	100
Subtotal (P)														
													49,000	1,322,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit													19,000	516,000
Contingency													20,000	551,000
													40,000	1,067,000
Subtotal (S = Q+R)														
													88,000	2,389,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													90,300,000	82,400,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													90,300,000	82,400,000

HSL-13B.WQ1
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Table B4.12-1 Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	52,000	SY	1.000	1.000	1.000		0	0	0
B - No Action	LS	1	--	0.00	/SY	11,000	SY	1.000	1.000	1.000		0	0	0
A - No Action	LS	1	--	0.00	/SY	34,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
0														
Subtotal (G = B+C+D+E+F)														
0														
TOTAL CAPITAL COSTS (H = A+G)														
0														
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H36L-01.W01
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Table B4.12-6d Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 6d: Caps/Covers (Clay/Soil Cap) with Modifications to Existing Systems

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
INDIRECT CAPITAL COSTS															
Mob/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (A)															
COST CODE															
B = 0.033 * (A)															
C = 0.390 * (A+B)															
D = 0.030 * (A+B+C)															
E = 0.013 * (A+B+C)															
F = 0.263 * (A+B+C+D+E)															
Subtotal (G = B+C+D+E+F)															
TOTAL CAPITAL COSTS H = A+G															
H36L-06D W01															
SOILS DAA															

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HBA - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	63,000	SY	1.000	1.000	1.000		4,000	4,000	4,000
HBA - Modification of Existing Soil Cover	LS	1	--	22.80	/SY	63,000	SY	1.000	1.000	1.000		1,639,000	1,639,000	1,639,000
HBA - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	63,000	SY	1.000	1.000	1.100	Disturbance	14,000	14,000	14,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HBA - Modification of Existing Soil Cover	A	1	30	0.80	/SY-YR	63,000	SY	1.000	1.000	1.000		58,000	1,725,000	914,000
HBA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
Subtotal (T) = J+K+L+M+N														
Subtotal (P) = Q+R														
Subtotal (S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

Table B4.12-13a Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Lime Basins	LS	1	--	197,977.00	/EA	1	EA	1.000	1.000	1.000			228,000	228,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	2,000	BCY	1.000	1.000	1.000			13,000	12,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1.000	1.000	1.000			4	4
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1.000	1.000	1.000			10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1.000	1.000	1.000			4	4
Subtotal (A)														
COST CODE: LMSS														
Mob/Demob B = 0.039 * (A)														
Indirects, Overhead & Profit C = 0.380 * (A+B)														
Engineering Design D = 0.045 * (A+B+C)														
Resident Engineering E = 0.015 * (A+B+C)														
Contingency F = 0.275 * (A+B+C+D+E)														
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - Thermal Description (Saturated Soil)	A	1	2	14.17	/BCY	200,000	BCY	1.000	1.000	1.000			3,234,000	3,157,000
A - Incineration	A	1	2	36.37	/BCY	90	BCY	1.000	1.000	1.000			4,000	4,000
Subtotal (A1)														
COST CODE: C														
Mob/Demob B1 = 0.020 * (A1)														
Contractor Markup C1 = 0.100 * (A1+B1)														
Engineering Design D1 = 0.090 * (A1+B1+C1)														
Resident Engineering E1 = 0.030 * (A1+B1+C1)														
Contingency F1 = 0.300 * (A1+B1+C1+D1+E1)														
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
Subtotal														
2,052,000														
5,756,000														
5,829,000														
16-Jul-93														
H36L-13A.WQ1														
SOILS DAA														

H36L-13A.WQ1
SOILS DAA

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Other	Factor	Factor	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Excavation of Cover Overburden	LS	3	--	1.89	/BCY	42,210	BCY	1,000	1,000	1,000	1,000	81,000	81,000	863,000
H - Excavation Dewatering Lime Basins	A	1	3	52,529.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	180,000	180,000	171,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	200,000	BCY	1,000	1,000	1,200	1,200	1,071,000	1,071,000	871,000
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	200,000	BCY	1,000	0.250	1,000	1,000	61,000	61,000	55,000
HB - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	2,000	BCY	1,000	1,000	1,000	1,000	4,000	4,000	3,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,000	BCY	1,000	1,000	1,000	1,000	2,000	2,000	2,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	2,000	BCY	1,000	1,000	1,000	1,000	8,000	8,000	6,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	200,000	BCY	1,000	1,000	1,000	1,000	282,000	282,000	265,000
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	200,000	BCY	1,000	0.250	1,000	1,000	48,000	48,000	45,000
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	200,000	BCY	1,000	1,000	1,000	1,000	383,000	383,000	358,000
HB - Backfill of Cover Overburden	LS	3	--	1.72	/BCY	42,210	BCY	1,000	1,000	1,000	1,000	83,000	83,000	75,000
HB - Re-vegetation of Disturbed Areas	LS	3	--	0.18	/SY	63,000	SY	1,000	1,000	1,100	1,100	14,000	14,000	13,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	34,000	SY	1,000	1,000	1,000	1,000	180,000	180,000	181,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	90	BCY	1,000	1,000	1,200	1,200	1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	90	BCY	1,000	0.250	1,000	1,000	30	30	20
A - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	1	BCY	1,000	1,000	1,000	1,000	2	2	2
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000	1,000	1	1	1
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	4.07	/BCY	1	BCY	1,000	1,000	1,000	1,000	5	5	4
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	1.28	/BCY	90	BCY	1,000	1,000	1,000	1,000	100	100	100
A - Backfill with Treated Soil	LS	3	--	0.86	/BCY-MILE	90	BCY	1,000	0.250	1,000	1,000	20	20	20
Subtotal (I)	LS	3	--	1.72	/BCY	90	BCY	1,000	1,000	1,000	1,000	200	200	200
Subtotal (I)												2,440,000	2,440,000	2,230,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				5.1%	J = 0.051 * (I)							125,000	125,000	114,000
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)							1,032,000	1,032,000	943,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							54,000	54,000	49,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							72,000	72,000	66,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)							1,163,000	1,163,000	1,063,000
Subtotal (D = J+K+L+M+N)												2,447,000	2,447,000	2,238,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - Thermal Desorption (Saturated Soil)	LS	3	--	73.64	/BCY	200,000	BCY	1,000	1,000	1,000	1,000	16,807,000	16,807,000	15,245,000
A - Incineration	LS	3	--	96.24	/BCY	90	BCY	1,000	1,000	1,000	1,000	10,000	10,000	9,000
Subtotal (I1)												16,817,000	16,817,000	15,253,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.0%	J1 = 0.000 * (I1)							0	0	0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							1,682,000	1,682,000	1,525,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0	0	0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							370,000	370,000	336,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							7,547,000	7,547,000	6,846,000
Subtotal (O1 = J1+K1+L1+M1+N1)												9,599,000	9,599,000	8,707,000
TOTAL O&M COSTS (OPERATIONS) [OO = I+O+I1+O1]												31,302,000	31,302,000	28,428,000

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	2,000	BCY	1,000	1,000	1,000		300	8,000	4,000		
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000		0	4	2		
Subtotal (P)												300	8,000	4,000		
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
COST CODE: LLSL																
Indirects, Overhead & Profit 39.0% Q = 0.390 * (P)												100	3,000	2,000		
Contingency 30.0% R = 0.300 * (P+Q)												100	3,000	2,000		
Subtotal (S = Q+R)												200	7,000	3,000		
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												1,000	15,000	8,000		
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													37,100,000	34,100,000		

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 SOILS DAA

Table B4.12-19a Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS																	
H - Excavation Dewatering, Lime Basins	LS	2	-	197,977.00	/EA	1	EA	1.000	1.000	1.000	1.000	228,000		228,000		215,000	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	2	-	5.72	/BCY	1	BCY	1.000	1.000	1.000	1.000	10		10		10	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	-	3.80	/BCY	1	BCY	1.000	1.000	1.000	1.000	4		4		4	
Subtotal (A)																	
INDIRECT CAPITAL COSTS																	
COST CODE: LMSS																	
Mod/Demob																	
Indirects, Overhead & Profit																	
Engineering Design																	
Resident Engineering																	
Contingency																	
Subtotal (G = B+C+D+E+F)																	
DIRECT SUBCONTRACT CAPITAL COSTS																	
HB - In Situ RF/Microwave Heating - Deep/Saturated	LS	1	-	7,066,000.00	/UNIT	1	UNIT	1.000	1.000	1.000	1.000	8,083,000		8,083,000		8,083,000	
A - Incineration	A	1	2	36.37	/BCY	90	BCY	1.000	1.000	1.000	1.000	4,000		4,000		4,000	
Subtotal (A1)																	
INDIRECT SUBCONTRACT CAPITAL COSTS																	
COST CODE: K																	
Mod/Demob																	
Contractor Markup																	
Engineering Design																	
Resident Engineering																	
Contingency																	
Subtotal (G1 = B1+C1+D1+E1+F1)																	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)																	
													13,311,000		13,311,000		13,289,000

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Table B4.12-19a Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HA - Excavation Dewatering, Lime Basins	A	1	5	52,529.00	/EA-YR	1	EA	1.000	1.000	1.000		300,000	300,000	273,000
HB - Installation of 6 Inches of Topsoil	A	1	5	3.24	/SY	63,000	SY	1.000	1.000	1.000		223,000	223,000	212,000
HB - Revegetation of Disturbed Areas	A	1	5	0.18	/SY	63,000	SY	1.000	1.000	1.000	Disturbance	14,000	14,000	13,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	34,000	SY	1.000	1.000	1.000		180,000	180,000	181,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	90	BCY	1.000	1.000	1.200	Odor Control	1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	90	BCY	1.000	0.250	1.000		30	30	20
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	BCY	1.000	1.000	1.000		2	2	1
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1.000	1.000	1.000		1	1	1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	1	BCY	1.000	1.000	1.000		5	5	4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	90	BCY	1.000	1.000	1.000		100	100	100
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	90	BCY	1.000	0.250	1.000		20	20	20
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	90	BCY	1.000	1.000	1.000		200	200	200
Subtotal (F)												738,000	738,000	679,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				4.5%									33,000	31,000
Indirects, Overhead & Profit				40.3%									310,000	285,000
Engineering Design				1.5%									18,000	15,000
Resident Engineering				2.0%									22,000	20,000
Contingency				30.0%									336,000	308,000
Subtotal (G = J+K+L+M+N)												717,000	680,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - In Situ RF/Microwave Heating - Deep/Saturated	A	1	5	229.41	/BCY	200,000	BCY	1.000	1.000	1.000		52,359,000	52,359,000	47,804,000
A - Incineration	LS	3	--	96.24	/BCY	90	BCY	1.000	1.000	1.000		10,000	10,000	9,000
Subtotal (H)												52,369,000	52,369,000	47,813,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.0%									0	0
Contractor Markup				6.0%									3,142,000	2,857,000
Engineering Design				0.5%									278,000	252,000
Resident Engineering				1.0%									556,000	505,000
Contingency				40.0%									22,537,000	20,491,000
Subtotal (I = J+K+L+M+N)												26,512,000	24,105,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+H+G)												80,336,000	73,056,000	

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Table BA.12-19a Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost				Factor	Factor	Factor	Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HIB - No Action	A	5	30	0.00	/SY	63,000	SV	1,000	1,000	1,000	0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000	0	4	2
Subtotal (P)													
											0	4	2
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: LLSL													
Indirects, Overhead & Profit				39.0%							0	2	1
Contingency				30.0%							0	2	1
Subtotal (S = O+P)													
											0	3	2
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													
											0	10	4
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													
											93,600,000	86,300,000	

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Table B4.13-1 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	8,600	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	/SY	8,600	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mob/Demo														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
3.3%														
39.0%														
3.0%														
1.3%														
26.3%														
Subtotal (A)														
0														
Subtotal (G =B+C+D+E+F)														
0														
TOTAL CAPITAL COSTS (H = A+G)														
0														

Table B4.13-1 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 1: No Additional Action (Provisions of TPA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	8,600	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	/SY	8,600	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Soil Monitoring, M-1 Pits	A	1	30	12,000.00	/EA-YR	1	EA	1.000	1.000	1.000		14,000	411,000	216,000
HA - Site Reviews	A	1	30	3,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	96,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													6,000	123,000
Contingency													8,000	132,000
TOTAL O&M COSTS (T = I+O+P+S)														
												20,000	596,000	316,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												36,000	1,076,000	570,000

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Table B4.13-5 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 5: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
H - Installation of Hydraulic Controls, M-1 Pits	LS	1	--	515,891.00	1	EA	1.000	1.000	1.000		588,000	588,000	588,000
Subtotal (A)													
INDIRECT CAPITAL COSTS													
Mob/Demob													
Indirects Overhead & Profit													
Engineering Design													
Resident Engineering													
Contingency													
Subtotal (B = 0.045 * (A))													
Subtotal (C = 0.400 * (A+B))													
Subtotal (D = 0.045 * (A+B+C))													
Subtotal (E = 0.018 * (A+B+C))													
Subtotal (F = 0.288 * (A+B+C+D+E))													
Subtotal (G = B+C+D+E+F)													
TOTAL CAPITAL COSTS (H = A+G)													
												1,180,000	1,180,000

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Table B4.13-5 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 5: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Slurry Wall (0 - 20 ft Deep)	LS	1	--	33.41	/SY	2,500	SY	1.000	1.000	1.000	95,000		95,000		95,000
H - Excavation of Borrow Material	LS	1	--	1.89	/BCY	2,500	BCY	1.000	1.000	1.000	5,000		5,000		5,000
H - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	2,500	BCY	1.000	1.500	1.000	4,000		4,000		4,000
H - Backfill with Borrow Material	LS	1	--	1.72	/BCY	2,500	BCY	1.000	1.000	1.000	5,000		5,000		5,000
H - Grade Filling w/Excav Soil from Slurry Trench Prior to Capping	LS	1	--	3.63	/BCY	2,500	BCY	1.000	1.000	1.000	10,000		10,000		10,000
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	8,600	SY	1.000	1.000	1.000	1,000		1,000		1,000
HA - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	8,600	SY	1.000	1.000	1.000	229,000		229,000		229,000
HA - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	8,600	SY	1.000	1.000	1.100	2,000		2,000		2,000
INDIRECT O&M COSTS (OPERATIONS)															
Subtotal (I)															
MOB/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (O = J+K+L+M+N)															
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HA - Installation of Clay/Soil Cap	A	1	30	0.80	/SY-YR	8,600	SY	1.000	1.000	1.000	8,000		236,000		125,000
HA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000	185,000		185,000		98,000
Subtotal (P)															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit															
Contingency															
Subtotal (R = Q+P+Contingency)															
TOTAL O&M COSTS (T = I+O+P+R)															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															

[Note: Total O&M Annual Cost Only Includes Long-Term Activities]

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1.000	1.000	1.000			10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1.000	1.000	1.000			4	4
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	29,000	BCY	1.000	1.000	1.000			111,000	108,000
A - Incineration	A	1	2	36.37	/BCY	29	BCY	1.000	1.000	1.000			1,000	1,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													71,000	68,000
													183,000	174,000

Table B4.13-10 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other Factor	Description	1992 (\$)	1993 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	A	3	5	3.91	/BCY	29,000	BCY	1,000	1,000	1,200	Odor Control	155,000	9,000	134,000
H - Transportation of Contaminated Soil to Solidification Facility	A	3	5	1.07	/BCY-MILE	29,000	BCY	1,000	0.250	1,000		9,000	8,000	8,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	1.28	/BCY	29,000	BCY	1,000	1,000	1,000		51,000	9,000	44,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	5	0.86	/BCY-MILE	29,000	BCY	1,000	0.250	1,000		9,000	7,000	7,000
H - Backfill with Treated Soil	A	3	5	1.72	/BCY	29,000	BCY	1,000	1,000	1,000		88,000	9,000	59,000
H - Soil Cover for Solidified Materials	A	3	5	9.14	/SY	8,600	SY	1,000	1,000	1,000		90,000	2,000	78,000
H - Revegetation of Disturbed Areas	A	3	5	0.18	/SY	8,600	SY	1,000	1,000	1,100	Disturbance	2,000	2,000	2,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	8,600	SY	1,000	1,000	1,000		48,000	44,000	44,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	29	BCY	1,000	1,000	1,200	Odor Control	200	200	200
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	29	BCY	1,000	0.250	1,000		10	10	10
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	BCY	1,000	1,000	1,000		2	2	2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000		1	1	1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	1	BCY	1,000	1,000	1,000		5	4	4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	29	BCY	1,000	1,000	1,000		40	40	40
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	29	BCY	1,000	0.250	1,000		10	10	10
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	29	BCY	1,000	1,000	1,000		100	100	100
Subtotal (I)												432,000		375,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				4.5%	J = 0.045 * (I)							19,000		17,000
Indirects, Overhead & Profit				41.5%	K = 0.415 * (I+J)							187,000		163,000
Engineering Design				0.5%	L = 0.005 * (I+J+K)							3,000		3,000
Resident Engineering				1.8%	M = 0.018 * (I+J+K)							11,000		10,000
Contingency				30.0%	N = 0.300 * (I+J+K+L+M)							196,000		170,000
Subtotal (O) = J+K+L+M+N												417,000		362,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Cement-Based Solidification	A	3	5	70.10	/BCY	29,000	BCY	1,000	1,000	1,000		2,320,000		2,008,000
A - Incineration	LS	3	--	96.24	/BCY	29	BCY	1,000	1,000	1,000		3,000		3,000
Subtotal (I1)												2,323,000		2,008,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.0%	J1 = 0.000 * (I1)							0		0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							232,000		201,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0		0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							51,000		44,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							1,043,000		901,000
Subtotal (O1) = J1+K1+L1+M1+N1												1,326,000		1,146,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												4,498,000		3,893,000

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Table B4.13-10 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Monitoring of Solidified Soil	A	5	30	0.25	/SY-YR	8,600	SY	1.000	1.000	1.000		2,000	84,000	30,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1.000	1.000	1.000		0	4	2
Subtotal (P)														
												9,000	238,000	118,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit				30.0%	Q = 0.390 * (P)							3,000	92,000	48,000
Contingency				30.0%	R = 0.300 * (P+Q)							4,000	98,000	48,000
Subtotal (S = Q+R)														
												7,000	181,000	85,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												16,000	427,000	213,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													5,110,000	4,280,000

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Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating), In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Cover for Solidified Materials	LS	3	--	/SY	8,600	SY	1.000	1.000	1.000	1.000		80,000	81,000	81,000
H - Installation of 6 Inches of Topsoil	LS	3	--	/SY	8,600	SY	1.000	1.000	1.000	1.000		32,000	32,000	28,000
H - Revegetation of Disturbed Areas	LS	3	--	/SY	8,600	SY	1.000	1.000	1.000	1.100	Disturbance	2,000	2,000	2,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	/SY	8,600	SY	1.000	1.000	1.000	1.000		48,000	48,000	48,000
A - Excavation of Soil with Agent	LS	3	--	/BCY	29	BCY	1.000	1.000	1.200	1.000	Odor Control	200	200	200
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	/BCY-MILE	29	BCY	1.000	0.250	1.000	1.000		10	10	10
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	/BCY	1	BCY	1.000	1.000	1.000	1.000		2	2	2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	/BCY-MILE	1	BCY	1.000	1.000	1.000	1.000		1	1	1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	/BCY	1	BCY	1.000	1.000	1.000	1.000		5	5	4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	/BCY	29	BCY	1.000	1.000	1.000	1.000		40	40	40
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	/BCY-MILE	29	BCY	1.000	0.250	1.000	1.000		10	10	10
A - Backfill with Treated Soil	LS	3	--	/BCY	29	BCY	1.000	1.000	1.000	1.000		100	100	100
Subtotal (I)												172,000	172,000	158,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit												8,000	8,000	7,000
Engineering Design												74,000	74,000	68,000
Resident Engineering												1,000	1,000	1,000
Contingency												4,000	4,000	4,000
Subtotal (O = J+K+L+M+N)												78,000	78,000	72,000
Subtotal (O = J+K+L+M+N)												168,000	168,000	153,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - In Situ RF/Microwave Heating - Deep/Saturated	LS	3	--	/BCY	2,300	BCY	1.000	1.000	1.000	1.000		602,000	602,000	548,000
H - In Situ Cement-Based Solidification	LS	3	--	/BCY	29,000	BCY	1.000	1.000	1.000	1.000		1,998,000	1,998,000	1,812,000
A - Incineration	LS	3	--	/BCY	29	BCY	1.000	1.000	1.000	1.000		3,000	3,000	3,000
Subtotal (I1)												2,604,000	2,604,000	2,363,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob														
Contractor Markup												0	0	0
Engineering Design												158,000	158,000	142,000
Resident Engineering												14,000	14,000	13,000
Contingency												28,000	28,000	25,000
Subtotal (O1 = J1+K1+L1+M1+N1)												1,120,000	1,120,000	1,018,000
Subtotal (O1 = J1+K1+L1+M1+N1)												1,318,000	1,318,000	1,186,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												4,259,000	4,259,000	3,867,000

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Table B4.13-19
Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 19; In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Monitoring of In Site Solidified Soil	A	3	30	0.25	/SY-YR	8,600	SY	1.000	1.000	1.000		2,000	66,000	35,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1.000	1.000	1.000		0	4	2
Subtotal (P)												8,000	241,000	122,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												3,000	94,000	48,000
Contingency												4,000	101,000	51,000
Subtotal (S = Q+R)												7,000	195,000	99,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												16,000	436,000	221,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													17,600,000	16,300,000

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Table B4.13-21
Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 21: In Situ Thermal Treatment (In Situ Vitrification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - No Action														
INDIRECT CAPITAL COSTS														
Subtotal (A)														
													0	0
COST CODE: 0														
0.0%													0	0
0.0%													0	0
0.0%													0	0
0.0%													0	0
0.0%													0	0
0.0%													0	0
Subtotal (G = B+C+D+E+F)														
0														
DIRECT SUBCONTRACT CAPITAL COSTS														
H - In Site Verification														
													903,000	903,000
COST CODE: LS														
													903,000	903,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Subtotal (A1)														
													903,000	903,000
COST CODE: P														
0.0%													0	0
6.0%													54,000	54,000
1.0%													10,000	10,000
1.0%													10,000	10,000
30.0%													283,000	283,000
Subtotal (G1 = B1+C1+D1+E1+F1)														
368,000														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
1,270,000														
1,270,000														

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost 1995 (\$)	Total Cost 1995 (\$)	PW Cost 1995 (\$)
DIRECT O&M COSTS (OPERATIONS)													
H - Excavation of Borrow Material	LS	2	--	1.89	13,050	BCY	1.000	1.000	1.000		28,000	28,000	27,000
H - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	13,050	BCY	1.000	1.500	1.000		19,000	19,000	18,000
H - Backfill with Borrow Material	LS	2	--	1.72	13,050	BCY	1.000	1.000	1.000		28,000	28,000	24,000
H - Installation of 6 Inches of Topsoil	LS	2	--	3.24	8,600	SY	1.000	1.000	1.000		32,000	32,000	30,000
H - Revegetation of Disturbed Areas	LS	2	--	0.18	8,600	SY	1.000	1.000	1.100	Disturbance	2,000	2,000	2,000
A - No Action	LS	1	--	0.00	8,600	SY	1.000	1.000	1.000		0	0	0
Subtotal (I)												107,000	102,000
INDIRECT O&M COSTS (OPERATIONS)													
COST CODE: ILSS													
Mob/Demob												3,000	3,000
Indirects, Overhead & Profit												43,000	41,000
Engineering Design												1,000	1,000
Resident Engineering												2,000	2,000
Contingency												41,000	38,000
Subtotal (O = J+K+L+M+N)												90,000	86,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
H - In Situ Vitrification	A	1	2	860.25	29,000	BCY	1.000	1.000	1.000		28,468,000	28,468,000	27,791,000
Subtotal (I1)												28,468,000	27,791,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mob/Demob												0	0
Contractor Markup												1,708,000	1,887,000
Engineering Design												302,000	295,000
Resident Engineering												302,000	295,000
Contingency												9,234,000	8,014,000
Subtotal (O1 = J1+K1+L1+M1+N1)												11,546,000	11,271,000
TOTAL O&M COSTS (OPERATIONS) [OO = I+Q+I1+O1]												40,212,000	39,249,000

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Table B4.13-21 Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 21: In Situ Thermal Treatment (In Situ Vitirification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
H - Long Term Soil Monitoring, M-1 Pits	A	2	30	12,000.00	/EA-YR	1	EA	1.000	1.000	1.000		14,000	387,000		207,000
HA - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	179,000		83,000
												20,000	578,000		301,000
Subtotal (P)															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit												8,000	225,000		117,000
Contingency												8,000	240,000		125,000
												16,000	465,000		243,000
												36,000	1,041,000		543,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)															
													42,900,000		41,100,000

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Table B4.14-1

Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	220,000	SY	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	3,600	SY	1,000	1,000	1,000			0	0
A - No Action	LS	1	--	0.00	/SY	87,000	SY	1,000	1,000	1,000			0	0
INDIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE														
3.3%	B = 0.033 * (A)													
36.0%	C = 0.360 * (A+B)													
3.0%	D = 0.030 * (A+B+C)													
1.3%	E = 0.013 * (A+B+C)													
26.3%	F = 0.263 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (H)														

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Table B4.14-1 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	220,000	SY	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	3,600	SY	1,000	1,000	1,000			0	0
A - No Action	LS	1	--	0.00	/SY	87,000	SY	1,000	1,000	1,000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, South Plants Central Processing	A	1	30	49,000.00	/EA-YR	1	EA	1,000	1,000	1,000		56,000	1,678,000	888,000
HBA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	96,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													0	0
Contingency													0	0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												112,000	3,365,000	1,783,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												3,370,000	1,780,000	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action (Limited)	LS	1	--	0.00	/SY	220,000	SY	1,000	1,000	1,000		0	0	
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3,200	BCY	1,000	1,000	1,000		21,000	20,000	
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3,200	BCY	1,000	1,000	1,000		14,000	13,000	
B - No Action	LS	1	--	0.00	/SY	3,600	SY	1,000	1,000	1,000		0	0	
Subtotal (A) = 35,000														
INDIRECT CAPITAL COSTS														
COST CODE: LUS\$														
Mod/Demob	3.3%	B = 0.033 * (A)										1,000	1,000	
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)										14,000	13,000	
Engineering Design	3.0%	D = 0.030 * (A+B+C)										1,000	1,000	
Resident Engineering	1.3%	E = 0.013 * (A+B+C)										1,000	1,000	
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)										14,000	13,000	
Subtotal (G = B+C+D+E+F) = 31,000														
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Description (Saturated Soil)	A	1	2	14.17	/BCY	320,000	BCY	1,000	1,000	1,000		5,175,000	5,061,000	
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	4,000	BCY	1,000	1,000	1,000		15,000	15,000	
Subtotal (A1) = 5,190,000														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mod/Demob	2.0%	B1 = 0.020 * (A1)										104,000	101,000	
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)										529,000	517,000	
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)										524,000	512,000	
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)										175,000	171,000	
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)										1,957,000	1,910,000	
Subtotal (G1 = B1+C1+D1+E1+F1) = 3,288,000														
TOTAL CAPITAL COSTS (H = A+G+A1+G1) = 8,544,000														
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Table B4.14-1b Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 1b: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3,200	BCY	1,000	1,000	1,000	1,000	500	13,000	7,000
H - Long Term Monitoring of Solidified Soil	A	3	30	0.25	/SY-YR	4,600	SY	1,000	1,000	1,000	1,000	1,000	37,000	19,000
HB - Long Term Soil Monitoring, South Plants Central Processing	A	3	30	49,000.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	56,000	1,596,000	783,000
HBA - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	6,000	173,000	87,000
Subtotal (P)												84,000	1,789,000	808,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												25,000	687,000	353,000
Contingency												27,000	746,000	378,000
Subtotal (S = Q+R)												52,000	1,433,000	731,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												115,000	3,221,000	1,837,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													63,500,000	56,900,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
HB - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	620,000	BCY	1.000	1.000	1.000		4,047,000	3,854,000			
HB - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	620,000	BCY	1.000	1.000	1.000		2,390,000	2,439,000			
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000		20	20			
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1.000	1.000	1.000		10	10			
Subtotal (A)												6,736,000	6,283,000			
INDIRECT CAPITAL COSTS																
COST CODE: LUMS																
Mob/Demob	3.3%	B = 0.033 * (A)												218,000	205,000	
Indirects, Overhead & Profit	37.6%	C = 0.376 * (A+B)												2,625,000	2,453,000	
Engineering Design	3.0%	D = 0.030 * (A+B+C)												287,000	269,000	
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												120,000	112,000	
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												2,822,000	2,448,000	
Subtotal (G = B+C+D+E+F)												5,873,000	5,487,000			
DIRECT SUBCONTRACT CAPITAL COSTS																
A - Incineration	A	1	2	36.37	/BCY	290	BCY	1.000	1.000	1.000		12,000	12,000			
Subtotal (A1)												12,000	12,000			
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mob/Demob	2.0%	B1 = 0.020 * (A1)												200	200	
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												1,000	1,000	
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												1,000	1,000	
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												400	400	
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												5,000	4,000	
Subtotal (G1 = B1+C1+D1+E1+F1)												8,000	7,000			
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												12,828,000	11,799,000			
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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Factor	Other	Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
HB - Soil Excavation	LS	3	--	3.91	/BCY	620,000	BCY	1,000	1,000	1,200	1,000	Odor Control	3,320,000			3,011,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	620,000	BCY	1,000	1,500	1,000	1,000		1,136,000			1,030,000
HB - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	620,000	BCY	1,000	1,000	1,000	1,000		2,660,000			2,612,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	620,000	BCY	1,000	1,000	1,000	1,000		1,337,000			1,213,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	620,000	BCY	1,000	1,500	1,000	1,000		913,000			828,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	620,000	BCY	1,000	1,000	1,000	1,000		1,217,000			1,104,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	220,000	SY	1,000	1,000	1,100	1,000	Disturbance	813,000			736,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	220,000	SY	1,000	1,000	1,100	1,000		50,000			45,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	87,000	SY	1,000	1,000	1,000	1,000		485,000			462,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	290	BCY	1,000	1,000	1,200	1,000	Odor Control	2,000			2,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	290	BCY	1,000	1,500	1,000	1,000		1,000			500
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3	BCY	1,000	1,000	1,000	1,000		10			5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3	BCY	1,000	1,000	1,000	1,000		4			3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	3	BCY	1,000	1,000	1,000	1,000		10			10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	290	BCY	1,000	1,000	1,000	1,000		400			400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	290	BCY	1,000	1,500	1,000	1,000		400			400
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	290	BCY	1,000	1,000	1,000	1,000		1,000			1,000
Subtotal (I)													12,154,000			11,046,000
INDIRECT O&M COSTS (OPERATIONS)																
Mob/Demob	4.5%	J = 0.045 * (I)	COST CODE: HLLS													
Indirects: Overhead & Profit	39.0%	K = 0.390 * (I+J)														
Engineering Design	0.5%	L = 0.005 * (I+J+K)														
Resident Engineering	1.8%	M = 0.018 * (I+J+K)														
Contingency	30.0%	N = 0.300 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)													5,416,000			4,922,000
Subtotal (I)													11,313,000			10,282,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
A - Incineration	LS	3	--	96.24	/BCY	290	BCY	1,000	1,000	1,000	1,000		32,000			28,000
Subtotal (II)													32,000			28,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mob/Demob	0.0%	J1 = 0.000 * (II)	COST CODE: D													
Contractor Markup	10.0%	K1 = 0.100 * (II+J1)														
Engineering Design	0.0%	L1 = 0.000 * (II+J1+K1)														
Resident Engineering	2.0%	M1 = 0.020 * (II+J1+K1)														
Contingency	40.0%	N1 = 0.400 * (II+J1+K1+L1+M1)														
Subtotal (O1 = J1+K1+L1+M1+N1)													18,000			16,000
Subtotal (I)													23,517,000			21,373,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+II+O1I)													23,517,000			21,373,000

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HR - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	620,000	BCY	1.000	1.000	1.000		82,000	2,575,000	1,305,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3	BCY	1.000	1.000	1.000		0	10	10
Subtotal (P)														
													82,000	2,575,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												38,000	1,004,000	508,000
Contingency												38,000	1,074,000	544,000
													74,000	2,078,000
Subtotal (S = Q+R)														
													188,000	4,654,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													40,800,000	35,500,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													40,800,000	35,500,000

Table B4.14-6
Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

[illegible]

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Table BA.14-6 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HBA - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	220,000	SY	1,000	1,000	1,000			15,000	15,000
HBA - Excavation of Borrow Material	LS	1	--	1.89	/BCY	500,000	BCY	1,000	1,000	1,000			1,078,000	1,078,000
HBA - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	500,000	BCY	1,000	1,500	1,000			738,000	738,000
HBA - Backfill with Borrow Material	LS	1	--	1.72	/BCY	500,000	BCY	1,000	1,000	1,000			861,000	861,000
HBA - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	220,000	SY	1,000	1,000	1,000			5,850,000	5,850,000
HBA - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	220,000	SY	1,000	1,000	1,100	Disturbance		50,000	50,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)														
MOB/DEMOL														
Indirects, Overhead & Profit	3.3%													
Engineering Design	37.8%													
Resident Engineering	0.5%													
Contingency	1.3%													
Subtotal (O = J+K+L+M)	28.3%													
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HBA - Installation of Clay/Soil Cap	A	2	30	0.80	/SY-YR	220,000	SY	1,000	1,000	1,000		201,000	5,825,000	3,041,000
HBA - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	179,000	93,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)														
Indirects, Overhead & Profit	39.0%													
Contingency	30.0%													
Subtotal (S)														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												207,000	6,003,000	3,134,000
												81,000	2,341,000	1,222,000
												86,000	2,503,000	1,307,000
												167,000	4,845,000	2,529,000
												374,000	26,782,000	21,578,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
													26,800,000	21,600,000

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	PW Cost
				Unit Cost								Total Cost		
INDIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3,200	BCY	1.000	1.000	1.000		21,000		20,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3,200	BCY	1.000	1.000	1.000		14,000		13,000
Subtotal (A)												35,000		32,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit												1,000		1,000
Engineering Design												14,000		13,000
Resident Engineering												1,000		1,000
Contingency												1,000		1,000
Subtotal (G = B+C+D+E+F)												14,000		13,000
Subtotal (G = B+C+D+E+F)												31,000		29,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	320,000	BCY	1.000	1.000	1.000		5,175,000		5,051,000
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	4,000	BCY	1.000	1.000	1.000		15,000		15,000
Subtotal (A1)												5,190,000		5,066,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup												104,000		101,000
Engineering Design												529,000		517,000
Resident Engineering												524,000		512,000
Contingency												175,000		171,000
Subtotal (G1 = B1+C1+D1+E1)												1,957,000		1,910,000
Subtotal (G1 = B1+C1+D1+E1+F1)												3,298,000		3,210,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
												8,544,000		8,337,000
HSR-06A.W01														
SOILS DAA														
16-Jul-93														

Table B4.14-6a Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 6a: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Factor	Volume Mileage	Other Factor	Description	1993 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																		
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	--	4.89	/SY	87,000	BCY	1.000	1.000	1.000	1.000	485,000			485,000		440,000
H - Soil Excavation	LS	3	--	--	3.91	/BCY	320,000	BCY	1.000	1.000	1.000	1.200	1,713,000			1,713,000		1,554,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	--	1.07	/BCY-MILE	320,000	BCY	1.000	0.250	1.000	1.000	98,000			98,000		89,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	--	1.55	/BCY	3,220	BCY	1.000	1.000	1.000	1.000	6,000			6,000		5,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	--	1.07	/BCY-MILE	3,200	BCY	1.000	1.000	1.000	1.000	4,000			4,000		4,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	--	4.07	/BCY	3,200	BCY	1.000	1.000	1.000	1.000	15,000			15,000		13,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	--	1.28	/BCY	320,000	BCY	1.000	1.000	1.000	1.000	467,000			467,000		424,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	--	0.86	/BCY-MILE	320,000	BCY	1.000	0.250	1.000	1.000	79,000			79,000		71,000
H - Backfill with Treated Soil	LS	3	--	--	1.72	/BCY	320,000	BCY	1.000	1.000	1.000	1.000	628,000			628,000		570,000
H - Soil Excavation	LS	3	--	--	3.91	/BCY	4,000	BCY	1.000	1.000	1.000	1.200	21,000			21,000		19,000
H - Transportation of Contaminated Soil to Solidification Facility	LS	3	--	--	1.07	/BCY-MILE	4,000	BCY	1.000	0.250	1.000	1.000	1,000			1,000		1,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	--	1.28	/BCY	4,000	BCY	1.000	1.000	1.000	1.000	7,000			7,000		6,000
H - Backfill with Treated Soil	LS	3	--	--	0.86	/BCY-MILE	4,000	BCY	1.000	0.250	1.000	1.000	1,000			1,000		1,000
H - Backfill with Treated Soil	LS	3	--	--	1.72	/BCY	4,000	BCY	1.000	1.000	1.000	1.000	9,000			9,000		8,000
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	--	0.06	/SY	230,000	SY	1.000	1.000	1.000	1.000	16,000			16,000		15,000
HBA - Installation of Clay/Soil Cap	A	3	4	4	23.30	/SY	230,000	SY	1.000	1.000	1.000	1.000	6,116,000			6,116,000		5,415,000
HBA - Revegetation of Disturbed Areas	A	3	4	4	0.18	/SY	230,000	SY	1.000	1.000	1.000	1.100	52,000			52,000		46,000
Subtotal (I)																		
INDIRECT O&M COSTS (OPERATIONS)																		
Mob/Demob					3.9%													
Indirects, Overhead & Profit					37.8%													
Engineering Design					0.5%													
Resident Engineering					1.5%													
Contingency					27.5%													
Subtotal (O = J+K+L+M+N)																		
Subtotal (I)																		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
H - Thermal Desorption (Saturated Soil)	LS	3	--	--	73.64	/BCY	320,000	BCY	1.000	1.000	1.000	1.000	28,891,000			28,891,000		24,391,000
H - Cement-Based Solidification	LS	3	--	--	70.10	/BCY	4,000	BCY	1.000	1.000	1.000	1.000	320,000			320,000		290,000
Subtotal (I)																		
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
Mob/Demob					0.0%													
Contractor Markup					10.0%													
Engineering Design					0.0%													
Resident Engineering					2.0%													
Contingency					40.0%													
Subtotal (O1 = J1+K1+L1+M1+N1)																		
Subtotal (O1 = J1+K1+L1+M1+N1)																		
TOTAL O&M COSTS (OPERATIONS) (OO = IO+O1+O2)																		
Subtotal (OO = IO+O1+O2)																		
Subtotal (OO = IO+O1+O2)																		

HSPC-06A.W01
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Table B4.14-6a Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 6a: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	BCY	3,200	BCY	1.000	1.000	1.000		500	13,000		7,000
H - Long Term Monitoring of Solidified Soil	A	3	30	0.25	/SY-YR	SY	6,100	SY	1.000	1.000	1.000		2,000	49,000		25,000
HBA - Installation of Clay/Soil Cap	A	3	30	0.80	/SY-YR	SY	230,000	SY	1.000	1.000	1.000		210,000	5,879,000		2,979,000
HBA - Site Reviews	A	3	30	5,400.00	/EA-YR	EA	1	EA	1.000	1.000	1.000		6,000	173,000		87,000
Subtotal (P)													218,000	6,114,000		3,098,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
COST CODE: LLSL																
Indirects, Overhead & Profit													85,000	2,384,000		1,208,000
Contingency													91,000	2,549,000		1,292,000
Subtotal (S = Q+R)													176,000	4,933,000		2,500,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													395,000	11,048,000		5,598,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)																
HSPC-06A.WQ1														80,400,000		68,900,000
SOILS DAA																16-Jul-93

Table B4.14-13
Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 13: Direct Thermal Desorption (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	PW Cost		
DIRECT CAPITAL COSTS																
HIB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	5,800	BCY	1,000	1,000	1,000		36,000	36,000	36,000		
HIB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	3.80	/BCY	5,800	BCY	1,000	1,000	1,000		25,000	25,000	22,000		
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1,000	1,000	1,000		20	20	20		
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1,000	1,000	1,000		10	10	10		
Subtotal (A)													63,000	58,000		
INDIRECT CAPITAL COSTS																
MOB/DEMOL																
Indirects, Overhead & Profit	3.3%													2,000	2,000	
Engineering Design	39.0%													25,000	23,000	
Resident Engineering	3.0%													3,000	2,000	
Contingency	1.3%													1,000	1,000	
28.3%													25,000	23,000		
COST CODE: LLSS													56,000	51,000		
B = 0.033 * (A)																
C = 0.390 * (A+B)																
D = 0.030 * (A+B+C)																
E = 0.013 * (A+B+C)																
F = 0.263 * (A+B+C+D+E)																
Subtotal (G = B+C+D+E+F)																
DIRECT SUBCONTRACT CAPITAL COSTS																
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	58,000	BCY	1,000	1,000	1,200		266,000	253,000			
HIB - Thermal Desorption (Saturated Soil)	A	1	2	14.17	/BCY	580,000	BCY	1,000	1,000	1,000		9,379,000	8,155,000			
A - Incineration	A	1	2	36.37	/BCY	290	BCY	1,000	1,000	1,000		12,000	12,000			
Subtotal (A1)													9,657,000	9,421,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
MOB/DEMOL																
Contractor Markup	2.0%													193,000	186,000	
Engineering Design	10.0%													985,000	961,000	
Resident Engineering	9.0%													975,000	951,000	
Contingency	3.0%													325,000	317,000	
30.0%													3,641,000	3,552,000		
COST CODE: C													6,119,000	5,989,000		
B1 = 0.020 * (A1)																
C1 = 0.100 * (A1+B1)																
D1 = 0.060 * (A1+B1+C1)																
E1 = 0.030 * (A1+B1+C1)																
F1 = 0.300 * (A1+B1+C1+D1+E1)																
Subtotal (G1 = B1+C1+D1+E1+F1)													15,695,000	15,469,000		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)																
													15,695,000	15,469,000		

Table B4.14-13 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 13: Direct Thermal Description (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost	
DIRECT O&M COSTS (OPERATIONS)																
HB - Soil Excavation	A	3	4	3.91	/BCY	620,000	BCY	1.000	1.000	1.200	Odor Control	3,320,000			2,698,000	
HB - Transportation of Contaminated Soil to Thermal Description Facility	A	3	4	1.07	/BCY-MILE	620,000	BCY	1.000	0.250	1.000		189,000			168,000	
HB - Load Treated Soil for Transport to Hazardous Landfill	A	3	4	1.55	/BCY	5,800	BCY	1.000	1.000	1.000		10,000			9,000	
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	1.07	/BCY-MILE	5,800	BCY	1.000	1.000	1.000		7,000			6,000	
HB - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	4.07	/BCY	5,800	BCY	1.000	1.000	1.000		27,000			24,000	
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	1.28	/BCY	580,000	BCY	1.000	1.000	1.000		847,000			750,000	
HB - Transportation of Treated Soil from Stockpile to Backfill Excavation	A	3	4	0.86	/BCY-MILE	580,000	BCY	1.000	0.250	1.000		142,000			128,000	
HB - Backfill with Treated Soil	A	3	4	1.72	/BCY	580,000	BCY	1.000	1.000	1.000		1,138,000			1,008,000	
HB - Installation of 6 Inches of Topsoil	A	3	4	3.24	/SY	220,000	SY	1.000	1.000	1.000		813,000			720,000	
HB - Revegetation of Disturbed Areas	A	3	4	0.18	/SY	220,000	SY	1.000	1.000	1.100	Disturbance	50,000			44,000	
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	7	1.28	/BCY	58,000	BCY	1.200	1.000	1.000		102,000			84,000	
H - Transportation of Treated Soil to Backfill Excavation	A	3	7	0.86	/BCY-MILE	58,000	BCY	1.200	0.500	1.000		34,000			28,000	
H - Backfill with Treated Soil	A	3	7	1.72	/BCY	58,000	BCY	1.200	1.000	1.000		137,000			113,000	
H - Soil Cover for Solidified Materials	A	3	7	9.14	/SY	44,000	SY	1.000	1.000	1.000		459,000			378,000	
H - Revegetation of Disturbed Areas	A	3	7	0.18	/SY	44,000	SY	1.000	1.000	1.100	Disturbance	10,000			8,000	
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	87,000	SY	1.000	1.000	1.000		465,000			462,000	
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	290	BCY	1.000	1.000	1.200	Odor Control	2,000			2,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	290	BCY	1.000	0.250	1.000		100			100	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3	BCY	1.000	1.000	1.000		10			5	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3	BCY	1.000	1.000	1.000		4			3	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	3	BCY	1.000	1.000	1.000		10			10	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	290	BCY	1.000	1.000	1.000		400			400	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	290	BCY	1.000	0.250	1.000		100			100	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	290	BCY	1.000	1.000	1.000		1,000			1,000	
Subtotal (I)																
INDIRECT O&M COSTS (OPERATIONS)																
Mod/Demob	COST CODE: HMLM															
Indirects, Overhead & Profit	5.1%	$J = 0.051 * (I)$														
Engineering Design	1.5%	$L = 0.015 * (I+J+K)$														
Resident Engineering	2.3%	$M = 0.023 * (I+J+K)$														
Contingency	32.5%	$N = 0.325 * (I+J+K+L+M)$														
Subtotal (O) = J+K+L+M+N																
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
HB - Thermal Description (Saturated Soil)	A	3	4	73.64	/BCY	580,000	BCY	1.000	1.000	1.000		48,741,000			43,157,000	
H - Cement-Based Solidification	A	3	7	70.10	/BCY	58,000	BCY	1.000	1.000	1.000		4,640,000			3,828,000	
A - Incineration	LS	3	--	96.24	/BCY	290	BCY	1.000	1.000	1.000		32,000			29,000	
Subtotal (II)																
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mod/Demob	COST CODE: D															
Contractor Markup	0.0%	$J1 = 0.000 * (I1)$														
Engineering Design	10.0%	$K1 = 0.100 * (I1+J1)$														
Resident Engineering	0.0%	$L1 = 0.000 * (I1+J1+K1)$														
Contingency	2.0%	$M1 = 0.020 * (I1+J1+K1)$														
	40.0%	$N1 = 0.400 * (I1+J1+K1+L1+M1)$														
Subtotal (O1) = J1+K1+L1+M1+N1																
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+J1+O1)																
													53,412,000	47,012,000		
													0	0		
													5,341,000	4,701,000		
													0	0		
													1,175,000	1,034,000		
													23,971,000	21,099,000		
													30,499,000	28,834,000		
													89,516,000	87,648,000		

Table B4.14-13 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 13: Direct Thermal Desorption (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/BCY-YR	5,800	BCY	1,000	1,000	1,000		1,000	23,000	11,000
H - Long Term Monitoring of Solidified Soil	A	7	30	0.25	/SY-YR	4,400	SY	1,000	1,000	1,000		1,000	30,000	14,000
H - Site Reviews	A	7	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	146,000	67,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3	BCY	1,000	1,000	1,000		0	10	10
Subtotal (P)														
												8,000	201,000	92,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 38.0% Q = 0.380 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
												3,000	78,000	36,000
												3,000	84,000	36,000
												7,000	162,000	74,000
Subtotal (S = Q+R)														
												15,000	364,000	168,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													1,165,000,000	103,000,000

HSPC-13.WQ1
SOILS DAA

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Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000	1.000	20	20	20	20
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1.000	1.000	1.000	1.000	10	10	10	10
Subtotal (A)															
INDIRECT CAPITAL COSTS															
Mod/Demob															
Costs															
Cost Code: LLSS															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (B) = B+C+D+E+F															
DIRECT SUBCONTRACT CAPITAL COSTS															
HB - In Situ RF/Microwave Heating - Deep/Saturated															
A - Incineration	LS	1	--	7,066,000.00	/UNIT	1	UNITS	1.000	1.000	1.000	1.000	8,063,000	8,063,000	8,063,000	8,063,000
Subtotal (A1)															
INDIRECT SUBCONTRACT CAPITAL COSTS															
Mod/Demob															
Costs															
Cost Code: K															
Contractor Markup															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (B1) = B1+C1+D1+E1+F1															
TOTAL CAPITAL COSTS (H = A+G+A1+G1)															
Subtotal (H) = A+B+C+D+E+F+G+H															
Subtotal (H) = 12,883,000															

HSPC-19.W/01

SOILS DAA

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Table B4.14-19 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
 Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
HB - Installation of 6 inches of Topsoil	A	1	14	3.24	/SY		180,000	1.000	1.000	1.000		688,000		688,000		484,000
HB - Revegetation of Disturbed Areas	A	1	14	0.18	/SY		180,000	1.000	1.000	1.000	Disturbance	41,000		41,000		30,000
H - Soil Cover for Solidified Materials	LS	3	--	9.14	/SY		44,000	1.000	1.000	1.000		459,000		459,000		416,000
H - Installation of 6 inches of Topsoil	LS	3	--	3.24	/SY		44,000	1.000	1.000	1.000		163,000		163,000		148,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY		44,000	1.000	1.000	1.000	Disturbance	10,000		10,000		9,000
A - Drilling and Agent Screening Prior to Excavation	LS	1	--	4.89	/SY		87,000	1.000	1.000	1.000		485,000		485,000		485,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY		290	1.000	1.000	1.000	Odor Control	2,000		2,000		2,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE		290	1.000	0.250	1.000		100		100		100
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY		3	1.000	1.000	1.000		10		10		5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE		3	1.000	1.000	1.000		4		4		3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY		3	1.000	1.000	1.000		10		10		10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY		290	1.000	1.000	1.000		400		400		400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE		290	1.000	0.250	1.000		100		100		100
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY		290	1.000	1.000	1.000		1,000		1,000		1,000
Subtotal (I)													1,828,000		1,828,000	1,595,000
INDIRECT O&M COSTS (OPERATIONS)																
Mob/Demob																
Indirects, Overhead & Profit																
Engineering Design																
Resident Engineering																
Contingency																
Subtotal (II)													71,000		71,000	61,000
Subtotal (O = J+K+L+M+N)													764,000		764,000	663,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
HB - In Situ RF/Microwave Heating - Deep/Saturated	A	1	14	229.41	/BCY		580,000	1.000	1.000	1.000		151,841,000		151,841,000		112,727,000
H - In Situ Cement-Based Solidification	LS	3	--	60.38	/BCY		58,000	1.000	1.000	1.000		3,996,000		3,996,000		3,625,000
A - Incineration	LS	3	--	96.24	/BCY		290	1.000	1.000	1.000		32,000		32,000		29,000
Subtotal (II)													155,869,000		155,869,000	116,380,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mob/Demob																
Contractor Markup																
Engineering Design																
Resident Engineering																
Contingency																
Subtotal (II)													0		0	0
Subtotal (O1 = J1+K1+L1+M1+N1)													9,352,000		9,352,000	6,983,000
Subtotal (O2 = L1+J1+K1)													826,000		826,000	617,000
Subtotal (O3 = O1+O2)													1,652,000		1,652,000	1,224,000
Subtotal (O4 = O3+O4)													67,080,000		67,080,000	50,085,000
Subtotal (O5 = J1+K1+L1+M1+N1)													78,910,000		78,910,000	58,919,000
Subtotal (O6 = L1+J1+K1+O1+O2+O3+O4+O5)													238,359,000		238,359,000	178,406,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+O2+O3+O4+O5+O6)																

HSPC-19.W01
 SOILS DAA

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Table B4.14-19 Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Monitoring of In Situ Solidified Soil	A	3	30	0.25	/SY-YR	44,000	SY	1.000	1.000	1.000		13,000	351,000	178,000
H - Site Reviews	A	3	30	5,400,000	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
B - No Action	A	12	30	0.00	/SY	3,600	SY	1.000	1.000	1.000		0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3	BCY	1.000	1.000	1.000		0	10	10
Subtotal (P)												19,000	524,000	266,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: ULSL														
Indirects: Overhead & Profit												7,000	204,000	104,000
Contingency												8,000	219,000	111,000
Subtotal (S = Q+R)												15,000	423,000	214,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												34,000	947,000	480,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)												252,000,000		192,000,000

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Table B4.15-1 Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Quantity	Units	Volume		Other		1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost	Units			Factor	Mileage	Factor	Description	Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	55,000	SY	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	38,000	SY	1,000	1,000	1,000			0	0
Subtotal (A)													0	0
INDIRECT CAPITAL COSTS														
Mob/Demob	3.3%			COST CODE			LLSS							
Indirects, Overhead & Profit	39.0%			B = 0.033 * (A)										
Engineering Design	3.0%			C = 0.390 * (A+B)										
Resident Engineering	1.3%			D = 0.030 * (A+B+C)										
Contingency	26.3%			E = 0.013 * (A+B+C)										
				F = 0.263 * (A+B+C+D+E)										
Subtotal (G = B+C+D+E+F)													0	0
TOTAL CAPITAL COSTS (H = A+G)													0	0

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Table B4.15-1 Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	55,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	38,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, South Plants Ditches	A	1	30	28,000.00	/EA-YR	1	EA	1.000	1.000	1.000		32,000	969,000	508,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = H+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
HSFD-01.WQ1														
SOILS DAA														

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Table B4.15-1a Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action (Limited)	LS	1	--	0.00	/SY	55,000	SY	1,000	1,000	1,000			0	0
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	63	BCY	1,000	1,000	1,000			400	400
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	63	BCY	1,000	1,000	1,000			300	200
B - No Action	LS	1	--	0.00	/SY	38,000	SY	1,000	1,000	1,000			0	0
Subtotal (A)													1,000	1,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit													20	20
Engineering Design													300	300
Resident Engineering													30	30
Contingency													10	10
													300	300
Subtotal (G = B+C+D+E+F)													1,000	1,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	6,300	BCY	1,000	1,000	1,000			102,000	99,000
Subtotal (A1)													102,000	99,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup													2,000	2,000
Engineering Design													10,000	10,000
Resident Engineering													10,000	10,000
Contingency													3,000	3,000
													38,000	37,000
Subtotal (G1 = B1+C1+D1+E1+F1)													85,000	83,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													188,000	184,000

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Table B4.15-1a Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action (Limited)	LS	1	--	0.00	/SY	55,000	SY	1.000	1.000	1.000		0	0	0
H - Soil Excavation	LS	3	--	3.91	/BCY	6,300	BCY	1.000	1.000	1.000		28,000	28,000	25,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		4,000	4,000	3,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	63	BCY	1.000	1.000	1.000		100	100	100
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	63	BCY	1.000	1.000	1.000		100	100	100
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	63	BCY	1.000	1.000	1.000		300	300	300
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	6,300	BCY	1.000	1.000	1.000		8,000	8,000	8,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		3,000	3,000	3,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	6,300	BCY	1.000	1.000	1.000		12,000	12,000	11,000
H - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	12,000	SY	1.000	1.000	1.000		44,000	44,000	40,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	12,000	SY	1.000	1.000	1.100	Disturbance	3,000	3,000	2,000
B - No Action	LS	1	--	0.00	/SY	38,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (f)												104,000	104,000	94,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob											COST CODE: MLSS			
Indirects, Overhead & Profit											J = 0.039 * (f)			
Engineering Design											K = 0.403 * (f+J)			
Resident Engineering											L = 0.005 * (f+J+K)			
Contingency											M = 0.015 * (f+J+K)			
											N = 0.275 * (f+J+K+L+M)			
Subtotal (O = J+K+L+M+N)												93,000	93,000	85,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	6,300	BCY	1.000	1.000	1.000		353,000	353,000	320,000
Subtotal (f)												353,000	353,000	320,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob											COST CODE: D			
Contractor Markup											J1 = 0.000 * (f)			
Engineering Design											K1 = 0.100 * (f+J1)			
Resident Engineering											L1 = 0.000 * (f+J1+K1)			
Contingency											M1 = 0.020 * (f+J1+K1)			
											N1 = 0.400 * (f+J1+K1+L1+M1)			
Subtotal (O1 = J1+K1+L1+M1+N1)												0	0	0
												36,000	36,000	32,000
												0	0	0
												8,000	8,000	7,000
												159,000	159,000	144,000
Subtotal (OO = f+O+O1+O1)												202,000	202,000	183,000
TOTAL O&M COSTS (OPERATIONS) (OO = f+O+O1+O1)												752,000	752,000	682,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1993 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	63	BCY	1,000	1,000	1,000		10	300	100
HB - Long Term Soil Monitoring, South Plants Ditches	A	3	30	28,000.00	/EA-YR	1	EA	1,000	1,000	1,000		32,000	885,000	453,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	173,000	87,000
Subtotal (P)														
38,000 1,087,000 541,000														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
Contingency														
Q = 0.380 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
15,000 416,000 211,000														
16,000 445,000 228,000														
31,000 861,000 437,000														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
69,000 1,928,000 977,000														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
2,850,000 1,820,000														

HSPD-01A.WQ1
SOILS DAA

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Table B4.15-3 Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost							Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS													
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	200,000	BCY	1.000	1.000	1.000	1,305,000	1,305,000	1,305,000
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	200,000	BCY	1.000	1.000	1.000	867,000	867,000	826,000
INDIRECT CAPITAL COSTS													
Mod/Demob	3.3%												
Indirects, Overhead & Profit	39.0%												
Engineering Design	3.0%												
Resident Engineering	1.3%												
Contingency	26.3%												
Subtotal (A)													
INDIRECT CAPITAL COSTS (H = A*G)													
Mod/Demob	B = 0.033 * (A)												
Indirects, Overhead & Profit	C = 0.390 * (A+B)												
Engineering Design	D = 0.030 * (A+B+C)												
Resident Engineering	E = 0.013 * (A+B+C)												
Contingency	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													
TOTAL CAPITAL COSTS (H = A+G)													
												2,173,000	2,131,000
												71,000	66,000
												875,000	858,000
												94,000	92,000
												36,000	36,000
												853,000	837,000
												1,931,000	1,895,000
												4,104,000	4,028,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Ditch Excavation	LS	2	--	3.82	/BCY	200,000	BCY	1.000	1.000	1.000		872,000	872,000		830,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	200,000	BCY	1.000	1.500	1.000		366,000	366,000		348,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	200,000	BCY	1.000	1.000	1.000		929,000	929,000		885,000
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	200,000	BCY	1.000	1.000	1.000		431,000	431,000		411,000
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	200,000	BCY	1.000	1.500	1.000		294,000	294,000		280,000
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	200,000	BCY	1.000	1.000	1.000		393,000	393,000		374,000
HB - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	93,000	SY	1.000	1.000	1.000		344,000	344,000		327,000
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	93,000	SY	1.000	1.000	1.100	Disturbance	21,000	21,000		20,000
INDIRECT O&M COSTS (OPERATIONS)															
Subtotal (I)												3,850,000	3,850,000		3,478,000
MOB/DEMOL															
Indirects: Overhead & Profit				3.9%	J = 0.038 * (I)							141,000	141,000		135,000
Engineering Design				38.0%	K = 0.390 * (I+J)							1,479,000	1,479,000		1,408,000
Resident Engineering				0.5%	L = 0.005 * (I+J+K)							26,000	26,000		25,000
Contingency				27.5%	M = 0.015 * (I+J+K)							79,000	79,000		75,000
					N = 0.275 * (I+J+K+L+M)							1,478,000	1,478,000		1,408,000
Subtotal (O)												3,204,000	3,204,000		3,051,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	200,000	BCY	1.000	1.000	1.000		30,000	30,000		448,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Subtotal (P)												30,000	30,000		448,000
Indirects: Overhead & Profit				38.0%	Q = 0.390 * (P)							12,000	12,000		175,000
Contingency				30.0%	R = 0.300 * (P+Q)							12,000	12,000		187,000
Subtotal (S)												24,000	24,000		363,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]															
												54,000	54,000		7,340,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
												12,500,000	12,500,000		11,000,000

Table B4.15-6 Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
INDIRECT CAPITAL COSTS													
Mod/Demob												0	0
Indirects, Overhead & Profit												0	0
Engineering Design												0	0
Resident Engineering												0	0
Contingency												0	0
Subtotal (A)												0	0
TOTAL CAPITAL COSTS (H = A+G)													
HSPD-06.W01												0	0
SOILS DAA												0	0

Table B4.15-6 Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	93,000	SY	1.000	1.000	1.000		6,000	6,000	6,000
HB - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	93,000	SY	1.000	1.000	1.000		2,473,000	2,473,000	2,473,000
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	260,000	BCY	1.000	1.000	1.000		581,000	581,000	581,000
HB - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	260,000	BCY	1.000	1.500	1.000		383,000	383,000	383,000
HB - Backfill with Borrow Material	LS	1	--	1.72	/BCY	260,000	BCY	1.000	1.000	1.000		510,000	510,000	510,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	93,000	SY	1.000	1.000	1.100	Disturbance	21,000	21,000	21,000
Subtotal (I)													3,954,000	3,954,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													128,000	128,000
Indirects, Overhead & Profit													1,541,000	1,541,000
Engineering Design													28,000	28,000
Resident Engineering													98,000	98,000
Contingency													1,725,000	1,725,000
Subtotal (O = J+K+L+M+N)													3,521,000	3,521,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Installation of Clay/Soil Cap	A	2	30	0.80	/SY-YR	93,000	SY	1.000	1.000	1.000		85,000	2,482,000	1,288,000
HB - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	179,000	83,000
Subtotal (P)													91,000	2,641,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													38,000	1,030,000
Contingency													38,000	1,101,000
Subtotal (S)													73,000	2,131,000
TOTAL O&M COSTS (T = I+O+P+S)													185,000	12,247,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													12,200,000	9,970,000

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Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	63	BCY	1.000	1.000	1.000			400	400
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	63	BCY	1.000	1.000	1.000			300	200
Subtotal (A)													1,000	1,000
INDIRECT CAPITAL COSTS														
COST CODE: LLLS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	36.5%	C = 0.365 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,000	1,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	6,300	BCY	1.000	1.000	1.000			102,000	86,000
Subtotal (A1)													102,000	86,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													65,000	63,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													166,000	164,000

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Table B4.15-6b Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost 1995 (\$)	Total Cost 1995 (\$)	PW Cost 1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	LS	3	--	3.91	/BCY	6,300	BCY	1.000	1.000	1.000		28,000	28,000	25,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		4,000	4,000	3,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	63	BCY	1.000	1.000	1.000		100	100	100
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	63	BCY	1.000	1.000	1.000		100	100	100
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	63	BCY	1.000	1.000	1.000		300	300	300
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	6,300	BCY	1.000	1.000	1.000		9,000	9,000	8,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		3,000	3,000	3,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	6,300	BCY	1.000	1.000	1.000		12,000	12,000	11,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	190,000	BCY	1.000	1.000	1.000		848,000	848,000	766,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	1.07	/BCY-MILE	190,000	BCY	1.000	0.750	1.000		174,000	174,000	156,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	3.63	/BCY	190,000	BCY	1.000	1.000	1.000		787,000	787,000	714,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	190,000	BCY	1.000	1.000	1.000		410,000	410,000	372,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	190,000	BCY	1.000	1.500	1.000		280,000	280,000	254,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	190,000	BCY	1.000	1.000	1.000		373,000	373,000	338,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	93,000	SY	1.000	1.000	1.000		344,000	344,000	312,000
HB - Re-vegetation of Disturbed Areas	LS	3	--	0.18	/SY	93,000	SY	1.000	1.000	1.000	Disturbance	21,000	21,000	19,000
Subtotal (I)												3,293,000	2,987,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				3.9%										
Indirects, Overhead & Profit				38.0%										
Engineering Design				0.5%										
Resident Engineering				1.5%										
Contingency				27.5%										
				N = 0.275 * (I+J+K+L+M)										
				Subtotal (O) = J+K+L+M+N										
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	6,300	BCY	1.000	1.000	1.000		353,000	353,000	320,000
Subtotal (II)												353,000	320,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				0.0%										
Contractor Markup				10.0%										
Engineering Design				0.0%										
Resident Engineering				2.0%										
Contingency				40.0%										
				J1 = 0.000 * (I1)										
				K1 = 0.100 * (I1+J1)										
				L1 = 0.000 * (I1+J1+K1)										
				M1 = 0.020 * (I1+J1+K1)										
				N1 = 0.400 * (I1+J1+K1+L1+M1)										
				Subtotal (OI) = J1+K1+L1+M1+N1										
												0	0	
												35,000	32,000	
												0	0	
												8,000	7,000	
												159,000	144,000	
												202,000	183,000	
												6,739,000	6,112,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+II+OI)														

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Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - No Action	A	3	30	0.00	/SY	93,000	1,000	1,000	1,000		0	0	0
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	63	1,000	1,000	1,000		10	300	100
Subtotal (P)													
Subtotal (P)													
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: LLSL													
Indirects, Overhead & Profit											4	100	100
Contingency											4	100	100
Subtotal (S = Q+R)													
Subtotal (S = Q+R)													
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													
Subtotal (T = P+S)													
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													
Subtotal (U = H+OO+T)													
6,910,000													

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost		
DIRECT CAPITAL COSTS																
H1B - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	2,000	BCY	1.000	1.000	1.000		13,000	13,000	12,000		
H1B - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	2,000	BCY	1.000	1.000	1.000		9,000	9,000	8,000		
Subtotal (A)												22,000	22,000	20,000		
INDIRECT CAPITAL COSTS																
COST CODE: LLSS																
Mob/Demob	3.3%	B = 0.033 * (A)												1,000	1,000	1,000
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)												8,000	8,000	8,000
Engineering Design	3.0%	D = 0.030 * (A+B+C)												1,000	1,000	1,000
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												400	400	400
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												8,000	8,000	8,000
Subtotal (G = B+C+D+E+F)												19,000	19,000	18,000		
DIRECT SUBCONTRACT CAPITAL COSTS																
H1B - Thermal Description (Dry Soil)	A	1	2	14.17	/BCY	200,000	BCY	1.000	1.000	1.000		3,234,000	3,234,000	3,157,000		
Subtotal (A1)												3,234,000	3,234,000	3,157,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mob/Demob	2.0%	B1 = 0.020 * (A1)												65,000	65,000	63,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												330,000	330,000	322,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												327,000	327,000	319,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												108,000	108,000	108,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												1,219,000	1,219,000	1,190,000
Subtotal (G1 = B1+C1+D1+E1+F1)												2,049,000	2,049,000	2,000,000		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												5,324,000	5,324,000	5,196,000		

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Table B4.15-13a Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	LS	3	--	3.91	/BCY	200,000	BCY	1.000	1.000	1.000		692,000	692,000	692,000
HB - Transportation of Contaminated Soil to Thermal Description Facility	LS	3	--	1.07	/BCY-MILE	200,000	BCY	1.000	0.500	1.000		122,000	122,000	111,000
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	2,000	BCY	1.000	1.000	1.000		4,000	4,000	3,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,000	BCY	1.000	1.000	1.000		2,000	2,000	2,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	2,000	BCY	1.000	1.000	1.000		8,000	8,000	8,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	200,000	BCY	1.000	1.000	1.000		262,000	262,000	265,000
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	200,000	BCY	1.000	0.500	1.000		98,000	98,000	86,000
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	200,000	BCY	1.000	1.000	1.000		363,000	363,000	366,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	93,000	SY	1.000	1.000	1.000		344,000	344,000	312,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	93,000	SY	1.000	1.000	1.100	Disturbance	21,000	21,000	19,000
Subtotal (I)												2,177,000	2,177,000	1,975,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				4.5%				COST CODE: MMMS						
Indirects, Overhead & Profit				39.0%				J = 0.045 * (I)						
Engineering Design				1.5%				K = 0.380 * (I+J)						
Resident Engineering				1.8%				L = 0.015 * (I+J+K)						
Contingency				28.8%				M = 0.016 * (I+J+K)						
								N = 0.288 * (I+J+K+L+M)						
Subtotal (O = J+K+L+M+N)												2,027,000	2,027,000	1,839,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - Thermal Description (Dry Soil)	LS	3	--	49.13	/BCY	200,000	BCY	1.000	1.000	1.000		11,213,000	11,213,000	10,171,000
Subtotal (II)												11,213,000	11,213,000	10,171,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob				0.0%				COST CODE: D						
Contractor Markup				10.0%				J1 = 0.000 * (II)						
Engineering Design				0.0%				K1 = 0.100 * (II+J1)						
Resident Engineering				2.0%				L1 = 0.000 * (II+J1+K1)						
Contingency				40.0%				M1 = 0.020 * (II+J1+K1)						
								N1 = 0.400 * (II+J1+K1+L1+M1)						
Subtotal (O1 = J1+K1+L1+M1+N1)												6,400,000	6,400,000	5,805,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+II+O1)												21,818,000	21,818,000	19,790,000

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Table B4.15-13a Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	2,000	BCY	1.000	1.000	1.000		300	8,000	4,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects: Overhead & Profit 30.0% $Q = 0.390 * (P)$														
Contingency 30.0% $R = 0.300 * (P+Q)$														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												1,000	15,000	8,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
												27,200,000	25,000,000	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	73,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	21,000	SY	1.000	1.000	1.000			0	0
Subtotal (A)														0
INDIRECT CAPITAL COSTS														
Mob/Demob														0
Indirects, Overhead & Profit														0
Engineering Design														0
Resident Engineering														0
Contingency														0
Subtotal (G = B+C+D+E+F)														0
TOTAL CAPITAL COSTS (H = A+G)														0

Table B4.16-1
Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	73,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	21,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													0	0
Cost Code														
J = 0.033 * (I)													0	0
K = 0.390 * (I+J)													0	0
L = 0.005 * (I+J+K)													0	0
M = 0.013 * (I+J+K+L)													0	0
N = 0.283 * (I+J+K+L+M)													0	0
Subtotal (O = J+K+L+M+N)													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, South Plants Tank Farm	A	1	30	28,000.00	/EA-YR	1	EA	1.000	1.000	1.000		32,000	859,000	508,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)													38,000	1,143,000
Cost Code														
Q = 0.390 * (P)													15,000	236,000
R = 0.300 * (P+Q)													16,000	253,000
Subtotal (S)													31,000	489,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													89,000	2,065,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													2,070,000	1,990,000

Table B4.16-3 Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	240,000	BCY	1.000	1.000	1.000		1,567,000	1,567,000	1,567,000	
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	240,000	BCY	1.000	1.000	1.000		1,041,000	1,041,000	991,000	
												2,607,000	2,558,000		
INDIRECT CAPITAL COSTS															
Mod/Demob															
Indirects, Overhead & Profit	3.3%														
Engineering Design	39.0%														
Resident Engineering	3.0%														
Contingency	1.3%														
	28.3%														
												85,000	83,000		
												1,060,000	1,030,000		
												112,000	110,000		
												47,000	46,000		
												1,024,000	1,005,000		
												2,318,000	2,274,000		
												4,925,000	4,831,000		
TOTAL CAPITAL COSTS (H = A+G)															

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Table B4.16-3 Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1993 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	2	--	3.91	/BCY	240,000	BCY	1.000	1.000	1.200	Odor Control	1,266,000	1,266,000	1,224,000	
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	240,000	BCY	1.000	1.500	1.000		440,000	440,000	419,000	
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	240,000	BCY	1.000	1.000	1.000		1,115,000	1,115,000	1,082,000	
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	240,000	BCY	1.000	1.000	1.000		518,000	518,000	493,000	
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	240,000	BCY	1.000	1.500	1.000		353,000	353,000	336,000	
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	240,000	BCY	1.000	1.000	1.000		471,000	471,000	449,000	
HB - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	94,000	SY	1.000	1.000	1.000		348,000	348,000	331,000	
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	94,000	SY	1.000	1.000	1.100	Disturbance	21,000	21,000	20,000	
Subtotal (I)															
													4,550,000		4,333,000
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				3.9%									176,000		166,000
Indirects, Overhead & Profit				38.0%									1,843,000		1,756,000
Engineering Design				0.5%									30,000		31,000
Resident Engineering				1.5%									86,000		84,000
Contingency				27.5%									1,843,000		1,755,000
Subtotal (O = J+K+L+M+N)													3,984,000		3,804,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	240,000	BCY	1.000	1.000	1.000		36,000	1,033,000		539,000
Subtotal (P)															
													36,000	1,033,000	539,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				38.0%									14,000		210,000
Contingency				30.0%									15,000		225,000
Subtotal (S)													29,000	833,000	435,000
TOTAL O&M COSTS (T = I+O+P+S)															
													84,000	10,410,000	9,111,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
													15,300,000		13,900,000

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Table B4.16-6
Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume		1995 (\$)		1995 (\$)	PW Cost
								Factor	Milage Factor	Annual Cost	Total Cost		
DIRECT O&M COSTS (OPERATIONS)													
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	94,000	SY	1.000	1.000	1.000	8,000	8,000	6,000
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	160,000	BCY	1.000	1.000	1.000	345,000	345,000	236,000
HB - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	160,000	BCY	1.000	1.500	1.000	236,000	236,000	314,000
HB - Backfill with Borrow Material	LS	1	--	1.72	/BCY	160,000	BCY	1.000	1.000	1.000	314,000	314,000	2,499,000
HB - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	94,000	SY	1.000	1.000	1.000	2,499,000	2,499,000	21,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	94,000	SY	1.000	1.000	1.100	21,000	21,000	
Subtotal (I) = J+K+L+M+N													
INDIRECT O&M COSTS (OPERATIONS)													
Mod/Demob				3.3%									
Indirects, Overhead & Profit				37.8%									
Engineering Design				0.5%									
Resident Engineering				1.3%									
Contingency				26.3%									
Subtotal (O) = J+K+L+M+N													
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - Installation of Clay/Soil Cap	A	2	30	0.80	/SY-YR	94,000	SY	1.000	1.000	1.000	86,000	2,499,000	1,299,000
HB - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000	6,000	179,000	93,000
Subtotal (P) = Q+R+S+T+U+V+W+X+Y+Z													
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit				39.0%									
Contingency				30.0%									
Subtotal (S) = H+I+J+K+L+M+N+O+P+Q+R+S+T+U+V+W+X+Y+Z													
TOTAL O&M COSTS (T = I+O+P+Q+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]													
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	2,400	BCY	1,000	1,000	1,000			16,000	15,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	2,400	BCY	1,000	1,000	1,000			10,000	9,000
Subtotal (A)													
INDIRECT CAPITAL COSTS													
Mod/Demob												1,000	1,000
Indirects, Overhead & Profit												10,000	10,000
Engineering Design												1,000	1,000
Resident Engineering												500	400
Contingency												10,000	10,000
Subtotal (B = B+C+D+E+F)													
DIRECT SUBCONTRACT CAPITAL COSTS													
HB - Thermal Desorption (Dry Soil)	A	1	2	14.17	240,000	BCY	1,000	1,000	1,000			3,681,000	3,768,000
Subtotal (A1)													
INDIRECT SUBCONTRACT CAPITAL COSTS													
Mod/Demob												78,000	78,000
Contractor Markup												366,000	366,000
Engineering Design												383,000	383,000
Resident Engineering												131,000	128,000
Contingency												1,463,000	1,428,000
Subtotal (G1 = B1+C1+D1+E1+F1)													
Subtotal (G1 = B1+C1+D1+E1+F1)													
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													
Subtotal (H = A+G+A1+G1)													
Subtotal (H = A+G+A1+G1)													

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1993 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	3	--	3.91	/BCY	240,000	BCY	1.000	1.000	1.200	Odor Control	1,285,000		1,188,000	
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	240,000	BCY	1.000	0.500	1.000		147,000		133,000	
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.35	/BCY	2,400	BCY	1.000	1.000	1.000		4,000		4,000	
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,400	BCY	1.000	1.000	1.000		3,000		3,000	
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	2,400	BCY	1.000	1.000	1.000		11,000		10,000	
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	240,000	BCY	1.000	1.000	1.000		361,000		318,000	
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	240,000	BCY	1.000	0.500	1.000		118,000		107,000	
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	240,000	BCY	1.000	1.000	1.000		471,000		427,000	
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	94,000	SY	1.000	1.000	1.000		348,000		315,000	
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	94,000	SY	1.000	1.000	1.100	Disturbance	21,000		19,000	
Subtotal (f)												2,758,000		2,502,000	
INDIRECT O&M COSTS (OPERATIONS)															
COST CODE: MUMS															
Mod/Demob				3.8%	J = 0.038 * (f)										
Indirects, Overhead & Profit				38.0%	K = 0.380 * (f+J)							107,000		97,000	
Engineering Design				0.5%	L = 0.005 * (f+J+K)							1,117,000		1,013,000	
Resident Engineering				1.5%	M = 0.015 * (f+J+K+L)							20,000		18,000	
Contingency				27.5%	N = 0.275 * (f+J+K+L+M)							80,000		54,000	
Subtotal (G) = J+K+L+M+N												1,117,000		1,013,000	
Subtotal (H) = J+K+L+M+N												2,421,000		2,188,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
HB - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	240,000	BCY	1.000	1.000	1.000		13,458,000		12,205,000	
Subtotal (I)												13,458,000		12,205,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
COST CODE: D															
Mod/Demob				0.0%	J1 = 0.000 * (I1)							0		0	
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							1,348,000		1,220,000	
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0		0	
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							288,000		268,000	
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							8,038,000		5,477,000	
Subtotal (O1) = J1+K1+L1+M1+N1												7,681,000		6,986,000	
Subtotal (O) = J1+K1+L1+M1+N1												28,315,000		23,888,000	
TOTAL O&M COSTS (OPERATIONS) (OO) = I+O1+O												28,315,000		23,888,000	
HSPT-13A WQ1															
SOILS DAA															
														16-Jul-93	

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Quantity	Units	Volume	Mileage	Other	Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	2,400	BCY	1,000	1,000	1,000	1,000		400	10,000	10,000		5,000
Subtotal (P)																
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Indirects, Overhead & Profit												100	4,000	4,000		2,000
Contingency												100	4,000	4,000		2,000
Subtotal (S = O+P)																
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)																
													32,700,000	32,700,000		30,100,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Soil Vapor Extraction	LS	1	--	1,033,000.00	/EA	1	EA	1.000	1.000	1.000		1,202,000	1,202,000	1,202,000
INDIRECT CAPITAL COSTS														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B = 0.033 * (A))														
Subtotal (C = 0.380 * (A+B))														
Subtotal (D = 0.030 * (A+B+C))														
Subtotal (E = 0.013 * (A+B+C))														
Subtotal (F = 0.283 * (A+B+C+D+E))														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														

Table B4.16-16a Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 16a: In Situ Physical/Chemical Treatment (Vacuum Extraction)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Soil Vapor Extraction	A	1	10	2.97	/SY-YR	73,000	SY	1.000	1.000	1.000					
B - Agricultural Practices	LS	1	--	0.20	/SY	21,000	SY	1.000	1.000	1.000					
H - Load Treated Soil for Transport to Hazardous Landfill	LS	1	--	1.55	/BCY	98,720	BCY	1.000	1.000	1.000					
H - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	98,720	BCY	1.000	0.500	1.000					
H - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	98,720	BCY	1.000	1.000	1.000					
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (I) = J+K+L+M+N															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
H - No Action	A	11	30	0.00	/SY	73,000	SY	1.000	1.000	1.000					
B - Long Term Soil Monitoring, South Plants Tank Farm	A	2	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000					
B - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000					
Subtotal (O) = J+K+L+M+N															
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit															
Contingency															
Subtotal (P) = Q+R+S															
TOTAL O&M COSTS (T = I+O+P+S)															
Subtotal (T) = I+O+P+S															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
Subtotal (U) = H+T															

HSPT: 16A.W01
SOILS: DAA
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Table B4.16-19a Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Table B4.16-19a Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Installation of 6 Inches of Topsoil	A	1	4	3.24	/SY	73,000	SY	1,000	1,000	1,000	1,000	270,000	270,000	251,000	
H - Revegetation of Disturbed Areas	A	1	4	0.18	/SY	73,000	SY	1,000	1,000	1,100	Disturbance	18,000	18,000	15,000	
B - Agricultural Practices	LS	1	--	0.20	/SY	21,000	SY	1,000	1,000	1,000		5,000	5,000	5,000	
Subtotal (I)													281,000	271,000	
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob	COST CODE: LLSM														
Indirects, Overhead & Profit	3.3%	$J = 0.033 * (I)$													
Engineering Design	39.0%	$K = 0.390 * (I+J)$													
Resident Engineering	0.5%	$L = 0.005 * (I+J+K)$													
Contingency	1.5%	$M = 0.015 * (I+J+K)$													
	27.5%	$N = 0.275 * (I+J+K+L+M)$													
Subtotal (O = J+K+L+M+N)													282,000	235,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - In Situ RF/Microwave Heating - Deep	A	1	4	198.66	/BCY	210,000	BCY	1,000	1,000	1,000		47,808,000	47,808,000	44,314,000	
Subtotal (I1)													47,808,000	44,314,000	
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)															
Mob/Demob	COST CODE: L														
Contractor Markup	0.0%	$J1 = 0.000 * (I1)$													
Engineering Design	8.0%	$K1 = 0.080 * (I1+J1)$													
Resident Engineering	0.5%	$L1 = 0.005 * (I1+J1+K1)$													
Contingency	1.0%	$M1 = 0.010 * (I1+J1+K1)$													
	40.0%	$N1 = 0.400 * (I1+J1+K1+L1+M1)$													
Subtotal (O1 = J1+K1+L1+M1+N1)													24,102,000	22,434,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)													72,253,000	67,255,000	
HSPT-19A.WQ1															
SOILS DAA															
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Table B4.16-19a Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	4	30	0.00	/SY	73,000	SY	1.000	1.000	1.000		0	0	0
R - Long Term Soil Monitoring, South Plants Tank Farm	A	1	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000		16,000	548,000	280,000
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
Subtotal (P)												24,000	733,000	388,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
Contingency														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S = Q+R)												20,000	581,000	313,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												44,000	1,324,000	702,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = It+00+T)														
												86,400,000	86,400,000	80,800,000

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SOILS DAA

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Table B4.17-1 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Units	Quantity	Units	Volume Mileage		Other Factor	1995 (\$)		1995 (\$)	PW Cost				
				Unit Cost	Unit Cost				Factor	Factor		Annual Cost	Total Cost						
DIRECT CAPITAL COSTS																			
H - No Action	LS	1	--	0.00		/SY	120,000	SY	1,000	1,000	1,000		0	0	0				
B - No Action	LS	1	--	0.00		/SY	500,000	SY	1,000	1,000	1,000		0	0	0				
A - No Action	LS	1	--	0.00		/SY	43,000	SY	1,000	1,000	1,000		0	0	0				
U - No Action	LS	1	--	0.00		/SY	15,000	SY	1,000	1,000	1,000		0	0	0				
Subtotal (A)													0	0	0				
INDIRECT CAPITAL COSTS																			
Mod/Demob				3.3%				COST CODE						0	0	0			
Indirects, Overhead & Profit				39.0%				B = 0.033 * (A)						0	0	0			
Engineering Design				3.0%				C = 0.390 * (A+B)						0	0	0			
Resident Engineering				1.3%				D = 0.030 * (A+B+C)						0	0	0			
Contingency				28.3%				E = 0.013 * (A+B+C)						0	0	0			
													F = 0.283 * (A+B+C+D+E)				0	0	0
Subtotal (G = B+C+D+E+F)															0	0	0		
TOTAL CAPITAL COSTS (H = A+G)																0	0	0	

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	120,000	SY	1,000	1,000	1,000		0	0	0
B - No Action	LS	1	--	0.00	/SY	500,000	SY	1,000	1,000	1,000		0	0	0
A - No Action	LS	1	--	0.00	/SY	43,000	SY	1,000	1,000	1,000		0	0	0
U - No Action	LS	1	--	0.00	/SY	15,000	SY	1,000	1,000	1,000		0	0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	Subtotal (I)			COST CODE			LLSS							
Indirects, Overhead & Profit	3.3%			J = 0.033 * (I)			K = 0.390 * (I+J)							
Engineering Design	0.5%			L = 0.005 * (I+J+K)			M = 0.013 * (I+J+K)							
Resident Engineering	1.3%			N = 0.263 * (I+J+K+L+M)			Subtotal (O = J+K+L+M+N)							
Contingency	26.3%													
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HIP - Long Term Soil Monitoring, South Plants Balance of Areas	A	1	30	146,000.00	/EA-YR	1	EA	1,000	1,000	1,000		167,000	4,998,000	2,649,000
HBAU - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
												173,000	5,183,000	2,747,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	Subtotal (P)			COST CODE			LLSL							
Contingency	30.0%			Q = 0.390 * (P)			R = 0.300 * (P+Q)							
												87,000	2,021,000	1,071,000
												72,000	2,161,000	1,145,000
												139,000	4,183,000	2,217,000
												312,000	9,366,000	4,963,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												9,370,000	4,960,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
HSPB-01.W01 SOILS DAA 16-Jul-93														

Table B4.17-1a Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume, No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action (Limited)	LS	1	--	0.00	/SY	120,000	SY	1,000	1,000	1,000		0	0	0
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	190	BCY	1,000	1,000	1,000		1,000	1,000	1,000
B - No Action	LS	1	--	0.00	/SY	500,000	SY	1,000	1,000	1,000		0	0	0
Subtotal (A)													1,000	1,000
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,000	1,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	19,000	BCY	1,000	1,000	1,000		307,000	307,000	300,000
Subtotal (A1)													307,000	300,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													195,000	180,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													503,000	491,000

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Table B4.17-1a Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume	Mileage	Other	Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost				Factor					Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	17,000	SY	1,000	1,000	1,000	1,000		1,000	96,000	90,000
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	17,000	SY	1,000	1,000	1,000	1,000		1,000	16,000	16,000
H - No Action (Limited)	LS	1	--	0.00	/SY	120,000	SY	1,000	1,000	1,000	1,000		0	0	0
H - Soil Excavation	LS	3	--	3.91	/BCY	19,000	BCY	1,000	1,000	1,000	1,000	Older Control	1,000	102,000	92,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	19,000	BCY	1,000	0.500	1,000	1,000		1,000	12,000	11,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	19,000	BCY	1,000	1,000	1,000	1,000		1,000	34,000	30,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	190	BCY	1,000	1,000	1,000	1,000		1,000	200	200
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	190	BCY	1,000	1,000	1,000	1,000		1,000	1,000	1,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	190	BCY	1,000	1,000	1,000	1,000		1,000	300	300
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	19,000	BCY	1,000	0.500	1,000	1,000		1,000	9,000	8,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	19,000	BCY	1,000	1,000	1,000	1,000		1,000	37,000	34,000
H - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	17,000	SY	1,000	1,000	1,000	1,000		1,000	63,000	57,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	17,000	SY	1,000	1,000	1,000	1,000	Disturbance	1,000	4,000	3,000
B - No Action	LS	1	--	0.00	/SY	500,000	SY	1,000	1,000	1,000	1,000		0	0	0
A - No Action	LS	1	--	0.00	/SY	43,000	SY	1,000	1,000	1,000	1,000		0	0	0
U - No Action	LS	1	--	0.00	/SY	15,000	SY	1,000	1,000	1,000	1,000		0	0	0
Subtotal (I)															
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				3.9%											
Indirects, Overhead & Profit				40.3%											
Engineering Design				0.5%											
Resident Engineering				1.5%											
Contingency				27.5%											
Subtotal (O = J+K+L+M+N)															
Subtotal (I)															
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	19,000	BCY	1,000	1,000	1,000	1,000		1,000	1,065,000	988,000
Subtotal (I)															
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mob/Demob				0.0%											
Contractor Markup				10.0%											
Engineering Design				0.0%											
Resident Engineering				2.0%											
Contingency				40.0%											
Subtotal (O1 = J1+K1+L1+M1+N1)															
Subtotal (O1 = J1+K1+L1+M1+N1)															
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+O1+O1)															
Subtotal (OO = I+O+O1+O1)															
Subtotal (OO = I+O+O1+O1)															

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Table B4.17-1a
Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 1a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; No Additional Action (Provisions of TFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	190	BCY	1.000	1.000	1.000		30	1,000	400
HB - Long Term Soil Monitoring, South Plants Balance of Areas	A	3	30	146,000.00	/EA-YR	1	EA	1.000	1.000	1.000		167,000	4,666,000	2,364,000
HBAU - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	67,000
Subtotal (P)												173,000	4,638,000	2,452,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												67,000	1,667,000	666,000
Contingency												72,000	2,018,000	1,022,000
Subtotal (S = Q+R)												139,000	3,685,000	1,678,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												312,000	8,743,000	4,430,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													11,600,000	7,090,000
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Table B4.17-3 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	720,000	BCY	1.000	1.000	1.000			4,700,000	4,478,000
HB - On-Post Hazardous Waste Landfill Closure	LS	4	--	3.80	/BCY	720,000	BCY	1.000	1.000	1.000			3,122,000	2,887,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1.000	1.000	1.000			10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	3.80	/BCY	1	BCY	1.000	1.000	1.000			4	4
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	5,000	BCY	1.000	1.000	1.000			25,000	23,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	4	--	3.70	/BCY	5,000	BCY	1.000	1.000	1.000			21,000	19,000
Subtotal (A)												7,858,000	7,215,000	
INDIRECT CAPITAL COSTS														
COST CODE: LIMS														
Mod/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	37.8%	C = 0.378 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												8,860,000	8,291,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	140	BCY	1.000	1.000	1.000			6,000	6,000
Subtotal (A1)												6,000	6,000	
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mod/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												4,000	4,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												14,737,000	13,515,000	

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Table B4.17-3 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume	Mileage	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																		
HB - Soil Excavation	LS	3	--		3.91	/BCY	720,000	BCY	1,000	1,000	1,200	Odor Control	3,655,000			3,655,000		3,497,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--		1.07	/BCY-MILE	720,000	BCY	1,000	1,500	1,000		1,319,000			1,319,000		1,198,000
HB - On-Post Hazardous Waste Landfill	LS	3	--		4.07	/BCY	720,000	BCY	1,000	1,000	1,000		3,344,000			3,344,000		3,033,000
HB - Excavation of Borrow Material	LS	3	--		1.89	/BCY	720,000	BCY	1,000	1,000	1,000		1,553,000			1,553,000		1,408,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--		0.86	/BCY-MILE	720,000	BCY	1,000	1,500	1,000		1,080,000			1,080,000		981,000
HB - Backfill with Borrow Material	LS	3	--		1.72	/BCY	720,000	BCY	1,000	1,000	1,000		1,413,000			1,413,000		1,282,000
HB - Installation of 6 Inches of Topsoil	LS	3	--		3.24	/SY	620,000	SY	1,000	1,000	1,100	Disturbance	2,282,000			2,282,000		2,079,000
HB - Revegetation of Disturbed Areas	LS	3	--		0.18	/SY	620,000	SY	1,000	1,000	1,000		140,000			140,000		127,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--		4.89	/SY	43,000	SY	1,000	1,000	1,000		240,000			240,000		228,000
A - Excavation of Soil with Agent	LS	3	--		4.07	/BCY	140	BCY	1,000	1,000	1,200	Odor Control	1,000			1,000		1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--		1.07	/BCY-MILE	140	BCY	1,000	1,500	1,000		300			300		200
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--		1.55	/BCY	1	BCY	1,000	1,000	1,000		2			2		2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--		1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000		1			1		1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--		4.07	/BCY	1	BCY	1,000	1,000	1,000		5			5		4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--		1.28	/BCY	140	BCY	1,000	0.500	1,000		100			100		100
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--		0.86	/BCY-MILE	140	BCY	1,000	0.500	1,000		100			100		100
A - Backfill with Treated Soil	LS	3	--		1.72	/BCY	140	BCY	1,000	1,000	1,000		300			300		200
U - UXO Clearance by Geophysics	LS	2	--		0.85	/SY	15,000	SY	1,000	1,000	1,000		15,000			15,000		14,000
U - Removal of Soil with UXO	LS	3	--		70.57	/BCY	49	BCY	1,000	1,000	1,000		4,000			4,000		4,000
U - Excavation of Debris from Surface Soil	LS	3	--		3.91	/BCY	5,000	BCY	1,000	1,000	1,300	Productivity	28,000			28,000		28,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--		0.71	/BCY-MILE	5,000	BCY	1,000	1,500	1,000		8,000			8,000		7,000
U - On-Post Solid Waste Landfill	LS	3	--		4.07	/BCY	5,000	BCY	1,000	1,000	1,000		23,000			23,000		21,000
Subtotal (I)													15,287,000			15,287,000		13,886,000
INDIRECT O&M COSTS (OPERATIONS)																		
Indirects, Overhead & Profit				5.1%	J = 0.051 * (I)								784,000			784,000		712,000
Engineering Design				39.0%	K = 0.390 * (I+J)								6,271,000			6,271,000		5,693,000
Resident Engineering				1.5%	L = 0.015 * (I+J+K)								335,000			335,000		304,000
Contingency				2.0%	M = 0.020 * (I+J+K)								447,000			447,000		406,000
				31.3%	N = 0.313 * (I+J+K+L+M)								7,229,000			7,229,000		6,563,000
Subtotal (O = J+K+L+M+N)													15,067,000			15,067,000		13,679,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
A - Incineration	LS	3	--		96.24	/BCY	140	BCY	1,000	1,000	1,000		15,000			15,000		14,000
U - Packaging and Transportation of HE Filled UXO to Army Off-Post Facility	LS	3	--		59.50	/BCY	49	BCY	1,000	1,000	1,000		3,000			3,000		3,000
Subtotal (I1)													18,000			18,000		17,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
Indirects, Overhead & Profit				0.0%	J1 = 0.000 * (I1)								0			0		0
Engineering Design				10.0%	K1 = 0.100 * (I1+J1)								2,000			2,000		2,000
Resident Engineering				0.0%	L1 = 0.000 * (I1+J1+K1)								0			0		0
Contingency				2.0%	M1 = 0.020 * (I1+J1+K1)								400			400		400
				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)								8,000			8,000		8,000
Subtotal (O1 = J1+K1+L1+M1+N1)													11,000			11,000		10,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)													30,353,000			30,353,000		27,590,000

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Table B4.17-3 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1997 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	4	30	0.13	/BCY-YR	720,000	BCY	1.000	1.000	1.000		107,000	2,884,000	1,419,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/BCY-YR	1	BCY	1.000	1.000	1.000		0	4	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	4	30	0.13	/BCY-YR	5,000	BCY	1.000	1.000	1.000		1,000	20,000	10,000
Subtotal (P)														
													109,000	2,904,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: ILSL														
Indirects, Overhead & Profit 39.0% Q = 0.390 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
													42,000	1,133,000
													45,000	1,211,000
													87,000	2,344,000
Subtotal (S = Q+R)														
													194,000	5,248,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
													30,400,000	43,700,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														

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Table B4.17-6
Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS																	
<div style="display: flex; justify-content: space-between;"> <div> <p>Subtotal (A)</p> <p>0</p> </div> <div> <p>0</p> </div> </div>																	
INDIRECT CAPITAL COSTS																	
Mobile/Demob	LLSS																
Indirects, Overhead & Profit																	
Engineering Design																	
Resident Engineering																	
Contingency																	
<div style="display: flex; justify-content: space-between;"> <div> <p>Subtotal (G = B+C+D+E+F)</p> <p>0</p> </div> <div> <p>0</p> </div> </div>																	
TOTAL CAPITAL COSTS (H = A+G)																	
<div style="display: flex; justify-content: space-between;"> <div> <p>0</p> </div> <div> <p>0</p> </div> </div>																	

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance In Surface Soil by Geophysics														
HBAU - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.24	/SY	15,000	SY	1.000	1.000	1.000		4,000	4,000	4,000
HBAU - Installation of Clay/Soil Cap	A	1	2	0.06	/SY	1,300,000	SY	1.000	1.000	1.000		86,000	86,000	87,000
HBAU - Excavation of Borrow Material	A	1	2	23.30	/SY	1,300,000	SY	1.000	1.000	1.000		34,596,000	34,596,000	33,743,000
HBAU - Transportation of Borrow Material to Backfill Area	A	1	2	1.89	/BCY	1,900,000	BCY	1.000	1.000	1.000		4,096,000	4,096,000	4,000,000
HBAU - Backfill with Borrow Material	A	1	2	0.86	/BCY-MILE	1,900,000	BCY	1.000	1.500	1.000		2,797,000	2,797,000	2,730,000
HBAU - Revegetation of Disturbed Areas	A	1	2	1.72	/BCY	1,900,000	BCY	1.000	1.000	1.000		3,229,000	3,229,000	3,641,000
	A	1	2	0.18	/SY	620,000	SY	1.000	1.000	1.100	Disturbance	140,000	140,000	137,000
Subtotal (I)												45,423,000	44,342,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	COST CODE LUMS													
Indirects, Overhead & Profit	J = 0.003 * (I)													
Engineering Design	K = 0.378 * (I+J)													
Resident Engineering	L = 0.005 * (I+J+K)													
Contingency	M = 0.013 * (I+J+K)													
	N = 0.263 * (I+J+K+L+M)													
Subtotal (O = J+K+L+M+N)												37,567,000	36,672,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HBAU - Installation of Clay/Soil Cap	A	3	30	0.80	/SY-YR	1,300,000	SY	1.000	1.000	1.000		1,187,000	33,231,000	16,839,000
HBAU - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (P)												1,193,000	33,403,000	16,927,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	COST CODE LLSL													
Contingency	Q = 0.390 * (P)													
	R = 0.300 * (P+Q)													
Subtotal (S)												466,000	13,027,000	6,801,000
												487,000	13,929,000	7,066,000
Subtotal (S)												953,000	26,956,000	13,680,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]												2,156,000	143,350,000	111,601,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													143,000,000	112,000,000
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Table B4.17-6b Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	190	BCY	1.000	1.000	1.000		1,000	1,000		1,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	190	BCY	1.000	1.000	1.000		1,000	1,000		1,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1.000	1.000	1.000		10	10		10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1.000	1.000	1.000		4	4		4
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	5,000	BCY	1.000	1.000	1.000		25,000	25,000		23,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	5,000	BCY	1.000	1.000	1.000		21,000	21,000		18,000
Subtotal (A)												48,000	48,000		45,000
INDIRECT CAPITAL COSTS															
MOB/Demob															
Indirects, Overhead & Profit	3.3%											2,000	2,000		1,000
Engineering Design	38.0%											19,000	19,000		18,000
Resident Engineering	3.0%											2,000	2,000		2,000
Contingency	1.3%											1,000	1,000		1,000
	28.3%											19,000	19,000		18,000
Subtotal (G = B+C+D+E+F)												43,000	43,000		40,000
DIRECT SUBCONTRACT CAPITAL COSTS															
H - Thermal Description (Dry Soil)	A	1	2	14.17	/BCY	19,000	BCY	1.000	1.000	1.000		307,000	307,000		300,000
A - Incineration	A	1	2	36.37	/BCY	140	BCY	1.000	1.000	1.000		6,000	6,000		6,000
Subtotal (A1)												313,000	313,000		306,000
INDIRECT SUBCONTRACT CAPITAL COSTS															
MOB/Demob															
Contractor Markup	2.0%											6,000	6,000		6,000
Engineering Design	10.0%											32,000	32,000		31,000
Resident Engineering	9.0%											32,000	32,000		31,000
Contingency	3.0%											11,000	11,000		10,000
	30.0%											118,000	118,000		115,000
Subtotal (G1 = B1+C1+D1+E1+F1)												198,000	198,000		194,000
TOTAL CAPITAL COSTS (H = A+G; A1+G1)												602,000	602,000		583,000

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Table B4.17-6b Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																		
H - Soil Excavation	LS	3	--	--	3.91	/BCY	19,000	BCY	1,000	1,000	1,000	Other Control	102,000		102,000		92,000	
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	--	1.07	/BCY-MILE	19,000	BCY	1,000	1,000	1,000		23,000		23,000		21,000	
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	--	1.55	/BCY	190	BCY	1,000	1,000	1,000		300		300		300	
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	--	1.07	/BCY-MILE	190	BCY	1,000	1,000	1,000		200		200		200	
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	--	4.07	/BCY	190	BCY	1,000	1,000	1,000		1,000		1,000		1,000	
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	--	1.28	/BCY	19,000	BCY	1,000	1,000	1,000		28,000		28,000		25,000	
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	--	0.86	/BCY-MILE	19,000	BCY	1,000	1,000	1,000		18,000		18,000		17,000	
H - Backfill with Treated Soil	LS	3	--	--	1.72	/BCY	19,000	BCY	1,000	1,000	1,000		37,000		37,000		34,000	
HB - Soil Excavation	LS	3	--	--	3.91	/BCY	700,000	BCY	1,000	1,000	1,000	Other Control	3,748,000		3,748,000		3,400,000	
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	--	1.07	/BCY-MILE	700,000	BCY	1,000	1,000	1,000		841,000		841,000		591,000	
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	--	3.63	/BCY	700,000	BCY	1,000	1,000	1,000		2,900,000		2,900,000		2,630,000	
HB - Excavation of Borrow Material	LS	3	--	--	1.89	/BCY	700,000	BCY	1,000	1,000	1,000		1,510,000		1,510,000		1,369,000	
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	--	0.86	/BCY-MILE	700,000	BCY	1,000	1,000	1,000		1,030,000		1,030,000		835,000	
HB - Backfill with Borrow Material	LS	3	--	--	1.72	/BCY	700,000	BCY	1,000	1,000	1,000		1,374,000		1,374,000		1,246,000	
HB - Installation of 6 Inches of Topsoil	LS	3	--	--	3.24	/SY	620,000	SY	1,000	1,000	1,000		2,292,000		2,292,000		2,079,000	
HB - Revegetation of Disturbed Areas	LS	3	--	--	0.18	/SY	620,000	SY	1,000	1,000	1,000	Disturbance	140,000		140,000		127,000	
A - Excavation of Soil with Agent	LS	3	--	--	4.55	/BCY	140	BCY	1,000	1,000	1,000	Other Control	1,000		1,000		1,000	
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	--	4.89	/SY	43,000	SY	1,000	1,000	1,000		240,000		240,000		228,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	--	1.07	/BCY-MILE	140	BCY	1,000	1,000	1,000		200		200		200	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	--	1.55	/BCY	1	BCY	1,000	1,000	1,000		2		2		2	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	--	1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000		1		1		1	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	--	4.07	/BCY	1	BCY	1,000	1,000	1,000		5		5		4	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	--	1.28	/BCY	140	BCY	1,000	1,000	1,000		200		200		200	
A - Backfill with Treated Soil	LS	3	--	--	0.86	/BCY-MILE	140	BCY	1,000	1,000	1,000		100		100		100	
U - UXO Clearance by Geophysics	LS	3	--	--	1.72	/BCY	140	BCY	1,000	1,000	1,000		300		300		200	
U - Removal of Soil with UXO	LS	2	--	--	0.85	/SY	15,000	SY	1,000	1,000	1,000		15,000		15,000		14,000	
U - Excavation of Debris from Surface Soil	LS	3	--	--	70.57	/BCY	49	BCY	1,000	1,000	1,000		4,000		4,000		4,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	--	3.91	/BCY	5,000	BCY	1,000	1,000	1,000	Productivity	29,000		29,000		26,000	
U - On-Post Solid Waste Landfill	LS	3	--	--	0.71	/BCY-MILE	5,000	BCY	1,000	1,500	1,300	Productivity	8,000		8,000		7,000	
Subtotal (I)					4.07	/BCY	5,000	BCY	1,000	1,000	1,000		23,000		23,000		21,000	
INDIRECT O&M COSTS (OPERATIONS)																		
Mob/Demob					4.5%	J = 0.045 * (I)							637,000		637,000		579,000	
Indirects, Overhead & Profit					39.0%	K = 0.390 * (I+J)							5,773,000		5,773,000		5,241,000	
Engineering Design					0.5%	L = 0.005 * (I+J+K)							103,000		103,000		93,000	
Resident Engineering					1.8%	M = 0.018 * (I+J+K)							360,000		360,000		327,000	
Contingency					30.0%	N = 0.300 * (I+J+K+L+M)							6,312,000		6,312,000		5,730,000	
Subtotal (O)													13,186,000		13,186,000		11,970,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
H - Thermal Desorption (Dry Soil)	LS	3	--	--	49.13	/BCY	19,000	BCY	1,000	1,000	1,000		1,085,000		1,085,000		998,000	
A - Incineration	LS	3	--	--	96.24	/BCY	140	BCY	1,000	1,000	1,000		15,000		15,000		14,000	
U - Packaging and Transportation of HE Filled Uro to Army Off-Post Facil	LS	3	--	--	59.50	/BCY	49	BCY	1,000	1,000	1,000		3,000		3,000		3,000	
Subtotal (U)													1,084,000		1,084,000		983,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																		
Mob/Demob					0.0%	J1 = 0.000 * (U)							0		0		0	
Contractor Markup					10.0%	K1 = 0.100 * (U+J1)							108,000		108,000		98,000	
Engineering Design					0.0%	L1 = 0.000 * (U+J1+K1)							0		0		0	
Resident Engineering					2.0%	M1 = 0.020 * (U+J1+K1)							24,000		24,000		22,000	
Contingency					40.0%	N1 = 0.400 * (U+J1+K1+L1+M1)							466,000		466,000		441,000	
Subtotal (O1)													619,000		619,000		561,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+U1+O1)																		
													29,054,000		29,054,000		26,375,000	

Table B4.17-6b Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	190	BCY	1,000	1,000	1,000	30	1,000	400	
HB - No Action	A	3	30	0.00	/SY	630,000	SY	1,000	1,000	1,000	0	0	0	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000	0	4	2	
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	5,000	BCY	1,000	1,000	1,000	1,000	21,000	11,000	
Subtotal (P)												1,000	22,000	11,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit				COST CODE: LLSL										
Contingency				38.0% Q = 0.380 * (P)										
				30.0% R = 0.300 * (P+Q)										
Subtotal (S = Q+R)												300	8,000	4,000
												300	8,000	
Subtotal (T = P+S)												1,000	17,000	8,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES)												1,000	39,000	20,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+Q+T)													29,700,000	27,000,000

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Table B4.17-13 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 13: Direct Thermal Desorption (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)													
HB - Soil Excavation	A	3	5	3.91	/BCY	720,000	1.000	1.000	1.200	Odor Control	3,855,000	3,855,000	3,333,000
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	A	3	5	1.07	/BCY-MILE	720,000	1.000	0.500	1.000		440,000	380,000	380,000
HB - Load Treated Soil for Transport to Hazardous Landfill	A	3	5	1.55	/BCY	6,300	1.000	1.000	1.000		11,000	10,000	10,000
HB - Transportation of Periculates to On-Post Hazardous Waste Landfill	A	3	5	1.07	/BCY-MILE	6,300	1.000	1.000	1.000		8,000	7,000	7,000
HB - On-Post Hazardous Waste Landfill (Particulates)	A	3	5	4.07	/BCY	6,300	1.000	1.000	1.000		28,000	25,000	25,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	1.28	/BCY	630,000	1.000	1.000	1.000		820,000	796,000	796,000
HB - Transportation of Treated Soil from Stockpile for Backfill	A	3	5	0.86	/BCY-MILE	630,000	1.000	0.500	1.000		309,000	287,000	287,000
HB - Backfill with Treated Soil	A	3	5	1.72	/BCY	630,000	1.000	1.000	1.000		1,237,000	1,089,000	1,089,000
HB - Revegetation of Disturbed Areas	A	3	12	0.18	/SY	620,000	1.000	1.000	1.100	Disturbance	140,000	103,000	103,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	12	1.28	/BCY	112,000	1.000	1.000	1.000		196,000	144,000	144,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	12	0.86	/BCY-MILE	112,000	1.000	1.000	1.000		132,000	97,000	97,000
H - Backfill with Treated Soil	A	3	12	1.72	/BCY	112,000	1.000	1.000	1.000		284,000	194,000	194,000
H - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	43,000	1.000	1.000	1.100	Disturbance	264,000	251,000	251,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	140	1.000	1.000	1.200	Odor Control	1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	140	1.000	0.500	1.000		100	100	100
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	1.000	1.000	1.000		2	2	2
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	1.07	/BCY-MILE	1	1.000	1.000	1.000		1	1	1
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	4.07	/BCY	1	1.000	1.000	1.000		5	4	4
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	1.28	/BCY	140	1.000	1.000	1.000		200	200	200
A - Backfill with Treated Soil	LS	3	--	0.86	/BCY-MILE	140	1.000	0.500	1.000		100	100	100
A - UXO Clearance by Geophysics	LS	3	--	1.72	/BCY	140	1.000	1.000	1.000		300	200	200
U - Removal of Soil with UXO	LS	3	--	0.85	/SY	15,000	1.000	1.000	1.000		15,000	14,000	14,000
U - Excavation of Debris from Surface Soil	LS	3	--	70.57	/BCY	49	1.000	1.000	1.000		4,000	4,000	4,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	3.91	/BCY	5,000	1.000	1.000	1.300	Productivity	28,000	28,000	28,000
U - On-Post Solid Waste Landfill	LS	3	--	0.71	/BCY-MILE	5,000	1.000	1.500	1.000	Productivity	7,000	7,000	7,000
Subtotal (f)				4.07	/BCY	5,000	1.000	1.000	1.000		23,000	21,000	21,000
Subtotal (f)											7,895,000	6,749,000	
INDIRECT O&M COSTS (OPERATIONS)													
Mob/Demob				5.1%	J = 0.051 * (f)						404,000	346,000	
Indirects, Overhead & Profit				39.0%	K = 0.390 * (f+J)						3,233,000	2,767,000	
Engineering Design				1.5%	L = 0.015 * (f+J+K)						173,000	148,000	
Resident Engineering				2.3%	M = 0.023 * (f+J+K)						259,000	222,000	
Contingency				32.5%	N = 0.325 * (f+J+K+L+M)						3,685,000	3,326,000	
Subtotal (Q) = J+K+L+M+N											7,954,000	6,808,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
HB - Thermal Desorption (Dry Soil)	A	3	5	49.13	/BCY	630,000	1.000	1.000	1.000		35,321,000	30,538,000	
H - Cement-Based Solidification	A	3	12	70.10	/BCY	112,000	1.000	1.000	1.000		8,980,000	6,989,000	
A - Incineration	LS	3	--	96.24	/BCY	140	1.000	1.000	1.000		15,000	14,000	
U - Packaging and Transportation of HE Filled Urns to Army Off-Post Facility	LS	3	--	59.50	/BCY	49	1.000	1.000	1.000		3,000	3,000	
Subtotal (f)											44,299,000	37,142,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mob/Demob				0.0%	J1 = 0.000 * (f)						0	0	
Contractor Markup				10.0%	K1 = 0.100 * (f+J1)						4,430,000	3,714,000	
Engineering Design				0.0%	L1 = 0.000 * (f+J1+K1)						0	0	
Resident Engineering				2.0%	M1 = 0.020 * (f+J1+K1)						875,000	817,000	
Contingency				40.0%	N1 = 0.400 * (f+J1+K1+L1+M1)						18,882,000	16,669,000	
Subtotal (Q1) = J1+K1+L1+M1+N1											25,286,000	21,201,000	
Subtotal (Q1) = J1+K1+L1+M1+N1											85,424,000	71,900,000	
TOTAL O&M COSTS (OPERATIONS) (QO = f+Q1+Q2)													

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Table B4.17-13 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
 Alternative 13: Direct Thermal Description (Direct Heating): Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	5	30	0.13	/BCY-YR	6,300	1.000	1.000	1.000		1,000	24,000	12,000
H - Long Term Monitoring of Solidified Soil	A	12	30	0.25	/SY-YR	20,000	1.000	1.000	1.000		6,000	108,000	42,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	1.000	1.000	1.000		6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	1.000	1.000	1.000		0	4	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	5,000	1.000	1.000	1.000		1,000	21,000	11,000
Subtotal (P)											14,000	328,000	152,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit											5,000	127,000	59,000
Contingency											6,000	136,000	63,000
Subtotal (S = Q+P)											11,000	263,000	123,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											24,000	589,000	274,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													
												104,000,000	89,300,000

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Table B4.17-19 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1,000	1,000	1,000	1,000		10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1,000	1,000	1,000	1,000		4	4
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	5,000	BCY	1,000	1,000	1,000	1,000		25,000	23,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	5,000	BCY	1,000	1,000	1,000	1,000		21,000	19,000
Subtotal (A)													46,000	43,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects, Overhead & Profit													1,000	1,000
Engineering Design													18,000	17,000
Resident Engineering													2,000	2,000
Contingency													1,000	1,000
Subtotal (B)													22,000	21,000
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - In Situ RF/Microwave Heating - Deep	LS	1	--	7,065,000.00	/UNIT	1	UNITS	1,000	1,000	1,000	1,000		8,063,000	8,063,000
A - Incineration	A	1	2	36.37	/BCY	140	BCY	1,000	1,000	1,000	1,000		6,000	6,000
Subtotal (A1)													8,069,000	8,069,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup													161,000	161,000
Engineering Design													484,000	484,000
Resident Engineering													1,047,000	1,047,000
Contingency													131,000	131,000
Subtotal (B1)													2,971,000	2,971,000
Subtotal (G1 = B1+C1+D1+E1+F1)													4,804,000	4,804,000
TOTAL CAPITAL COSTS (H = A+B+G+I+G1)														
													12,959,000	12,953,000

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Table B4.17-19 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																	
H - Soil Cover for Solidified Materials	LS	3	--	9.14	/SY	SV	20,000	SV	1,000	1,000	1,000		209,000	209,000	2,079,000	189,000	
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	SV	620,000	SV	1,000	1,000	1,000		2,292,000	2,292,000	140,000	127,000	
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	SV	620,000	SV	1,000	1,000	1,000	Disturbance	140,000	140,000	229,000	1,000	
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	BCY	43,000	BCY	1,000	1,000	1,200		1,000	1,000	100	100	
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	BCY	140	BCY	1,000	1,000	1,000	Odor Control	100	100	2	2	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	BCY	140	BCY	1,000	1,000	1,000		200	200	100	100	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	BCY	1	BCY	1,000	1,000	1,000		1	1	1	1	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY	BCY	1	BCY	1,000	1,000	1,000		5	5	4	4	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	BCY	1	BCY	1,000	1,000	1,000		200	200	100	100	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	BCY	140	BCY	1,000	1,000	1,000		100	100	300	200	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	BCY	140	BCY	1,000	1,000	1,000		15,000	15,000	4,000	14,000	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	BCY	140	BCY	1,000	1,000	1,000		4,000	4,000	28,000	26,000	
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	SV	15,000	SV	1,000	1,000	1,000		8,000	8,000	7,000	21,000	
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	BCY	49	BCY	1,000	1,000	1,300	Productivity	23,000	23,000	2,687,000	2,687,000	
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	BCY	5,000	BCY	1,000	1,000	1,300						
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	BCY	5,000	BCY	1,000	1,500	1,300	Productivity					
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	BCY	5,000	BCY	1,000	1,000	1,000						
Subtotal (I)														2,981,000	2,981,000		
INDIRECT O&M COSTS (OPERATIONS)																	
Mob/Demob																	
Indirects, Overhead & Profit																	
Engineering Design																	
Resident Engineering																	
Contingency																	
Subtotal (O = J+K+L+M+N)														2,598,000	2,598,000		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
HB - In Situ RF/Microwave Heating - Deep	A	1	11	198.66	/BCY	BCY	630,000	BCY	1,000	1,000	1,000		142,824,000	142,824,000	113,243,000	7,000,000	
H - In Situ Cement-Based Solidification	LS	3	--	60.38	/BCY	BCY	112,000	BCY	1,000	1,000	1,000		7,717,000	7,717,000	14,000	3,000	
A - Incineration	LS	3	--	96.24	/BCY	BCY	140	BCY	1,000	1,000	1,000		3,000	3,000	150,559,000	120,259,000	
U - Packaging and Transportation of HE Filled Urns to Army Off-Post Facility	LS	3	--	59.50	/BCY	BCY	49	BCY	1,000	1,000	1,000						
Subtotal (II)														150,559,000	150,559,000		
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
Mob/Demob																	
Contractor Markup																	
Engineering Design																	
Resident Engineering																	
Contingency																	
Subtotal (OI = JI+KI+LI+MI+NI)														0	0		
														8,034,000	8,034,000	7,216,000	637,000
														798,000	798,000	1,275,000	51,755,000
														64,795,000	64,795,000	78,222,000	60,882,000
Subtotal (OO = IO+II+OI)														232,342,000	232,342,000	186,207,000	

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Table B4.17-19 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 19: In Situ Thermal Treatment (RF/Microwave Heating); In Situ Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
H - Long Term Monitoring of In Situ Solidified Soil	A	3	30	0.25	/SV-YR	20,000	SV	1,000	1,000	1,000		6,000	160,000	61,000	
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	173,000	87,000	
B - No Action	A	10	30	0.00	/SY	500,000	SY	1,000	1,000	1,000		0	0	0	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000		0	4	2	
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	5,000	BCY	1,000	1,000	1,000		1,000	21,000	11,000	
Subtotal (P)															
												13,000	353,000	179,000	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit												5,000	136,000	70,000	
Contingency												5,000	147,000	75,000	
Subtotal (S = Q+R)															
												10,000	285,000	144,000	
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)															
												23,000	638,000	323,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)															
													246,000,000	199,000,000	

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Table B4.17-20 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 20: In Situ Thermal Treatment (Surface Soil Heating); Direct Thermal Description (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)			
				Unit Cost							Total Cost	PW Cost				
DIRECT CAPITAL COSTS																
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	4,000	1.000	1.000	1.000		20,000	25,000				
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	4,000	1.000	1.000	1.000		17,000	16,000				
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	1.000	1.000	1.000		10	10				
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	1.000	1.000	1.000		4	4				
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	5,000	1.000	1.000	1.000		25,000	23,000				
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	5,000	1.000	1.000	1.000		21,000	19,000				
Subtotal (A)												89,000	83,000			
INDIRECT CAPITAL COSTS																
COST CODE: LLSS																
Mod/Demob	3.3%	B = 0.033 * (A)												3,000	3,000	
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												36,000	34,000	
Engineering Design	3.0%	D = 0.030 * (A+B+C)												4,000	4,000	
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												2,000	1,000	
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												35,000	33,000	
Subtotal (G = B+C+D+E+F)												79,000	74,000			
DIRECT SUBCONTRACT CAPITAL COSTS																
HB - In Situ Surface Soil Heating	LS	1	--	951,200.00	/UNIT	2	1.000	1.000	1.000		2,171,000	2,171,000				
HB - Thermal Description (Dry Soil)	A	1	2	14.17	/BCY	400,000	1.000	1.000	1.000		6,468,000	6,314,000				
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	112,000	1.000	1.000	1.000		428,000	408,000				
A - Incineration	A	1	2	36.37	/BCY	140	1.000	1.000	1.000		6,000	6,000				
Subtotal (A1)												9,073,000	8,689,000			
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: N																
Mod/Demob	2.0%	B1 = 0.020 * (A1)												181,000	178,000	
Contractor Markup	9.0%	C1 = 0.090 * (A1+B1)												833,000	817,000	
Engineering Design	7.0%	D1 = 0.070 * (A1+B1+C1)												706,000	683,000	
Resident Engineering	2.8%	E1 = 0.028 * (A1+B1+C1)												272,000	277,000	
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												3,321,000	3,257,000	
Subtotal (G1 = B1+C1+D1+E1+F1)												5,319,000	5,217,000			
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												14,561,000	14,273,000			
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Table BA.17-20 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 20: In Situ Thermal Treatment (Surface Soil Heating); Direct Thermal Desorption (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Volume Factor	Mitigation Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)													
HB - Soil Excavation	LS	3	--	3.91	/BCY	480,000	BCY	1.000	1.000	1.200	Odor Control	2,570,000	2,331,000
HB - Load Treated Soil for Transport to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	400,000	BCY	1.000	0.500	1.000		244,000	222,000
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	4,000	BCY	1.000	1.000	1.000		7,000	6,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	4,000	BCY	1.000	1.000	1.000		5,000	4,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	4,000	BCY	1.000	1.000	1.000		18,000	17,000
H - Load Nonhazardous Treated Soil for Backfill	A	3	9	1.28	/BCY	112,000	BCY	1.200	1.000	1.000		188,000	155,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	9	0.86	/BCY-MILE	112,000	BCY	1.200	1.000	1.000		132,000	104,000
H - Backfill with Treated Soil	A	3	9	1.72	/BCY	112,000	BCY	1.200	1.000	1.000		284,000	208,000
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	400,000	BCY	1.000	1.000	1.000		708,000	642,000
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	400,000	BCY	1.000	0.500	1.000		198,000	178,000
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	400,000	BCY	1.000	1.000	1.000		785,000	712,000
HB - Installation of 6 Inches of Topsoil	A	1	14	3.24	/SY	620,000	SY	1.000	1.000	1.000	Disturbance	2,292,000	1,702,000
HB - Revegetation of Disturbed Areas	A	1	14	0.18	/SY	620,000	SY	1.000	1.000	1.000		140,000	104,000
HB - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	43,000	SY	1.000	1.000	1.000		240,000	229,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	140	BCY	1.000	1.000	1.200	Odor Control	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	140	BCY	1.000	0.500	1.000		100	100
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	BCY	1.000	1.000	1.000		2	2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1.000	1.000	1.000		1	1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	1	BCY	1.000	1.000	1.000		5	4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	140	BCY	1.000	1.000	1.000		200	200
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	140	BCY	1.000	1.000	1.000		100	100
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	140	BCY	1.000	1.000	1.000		300	300
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	15,000	SY	1.000	1.000	1.000		15,000	14,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	49	BCY	1.000	1.000	1.000		4,000	4,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	5,000	BCY	1.000	1.000	1.300	Productivity	29,000	28,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	5,000	BCY	1.000	1.500	1.000	Productivity	8,000	7,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	5,000	BCY	1.000	1.000	1.000		23,000	21,000
Subtotal (I)													
INDIRECT O&M COSTS (OPERATIONS)													
Mob/Demob				3.9%	J = 0.039 * (I)							7,878,000	6,886,000
Indirects, Overhead & Profit				38.0%	K = 0.380 * (I+J)							3,050,000	2,580,000
Engineering Design				0.5%	L = 0.005 * (I+J+K)							3,192,000	2,709,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							57,000	48,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)							228,000	183,000
Subtotal (O) = J+K+L+M+N													
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
HB - In Situ Surface Soil Heating	A	1	14	27.30	/SY	480,000	SY	1.000	1.000	1.000		14,954,000	11,102,000
HB - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	400,000	BCY	1.000	1.000	1.000		22,428,000	20,341,000
H - Cement-Based Solidification	A	3	9	70.10	/BCY	112,000	BCY	1.000	1.000	1.000		8,980,000	7,053,000
A - Incineration	LS	3	--	96.21	/BCY	140	BCY	1.000	1.000	1.000		15,000	14,000
U - Packaging and Transportation of HE Filled UXO to Army Off-Post Facility	LS	3	--	59.50	/BCY	49	BCY	1.000	1.000	1.000		3,000	3,000
Subtotal (II)													
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mob/Demob				0.0%	J1 = 0.000 * (II)							0	0
Contractor Markup				9.0%	K1 = 0.090 * (II+J1)							4,172,000	3,466,000
Engineering Design				0.2%	L1 = 0.002 * (II+J1+K1)							101,000	84,000
Resident Engineering				2.0%	M1 = 0.020 * (II+J1+K1)							1,011,000	840,000
Contingency				40.0%	N1 = 0.400 * (II+J1+K1+L1+M1)							20,657,000	17,161,000
Subtotal (O1) = J1+K1+L1+M1+N1													
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+II)													
												87,882,000	73,052,000

Table B4.17-20 Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
 Alternative 20: In Situ Thermal Treatment (Surface Soil Heating); Direct Thermal Desorption (Direct Heating); Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	4,000	BCY	1,000	1,000	1,000	1,000	17,000	6,000
H - Long Term Monitoring of Solidified Soil	A	9	30	0.25	/SY-YR	95,000	SY	1,000	1,000	1,000	27,000	596,000	254,000
H - Site Reviews	A	9	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	8,000	136,000	58,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000	0	4	2
U - On-Post Solid Waste Landfill Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	5,000	BCY	1,000	1,000	1,000	1,000	21,000	11,000
Subtotal (P)											35,000	799,000	330,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Indirects, Overhead & Profit											13,000	300,000	129,000
Contingency											14,000	321,000	136,000
Subtotal (S = Q+R)											28,000	621,000	265,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											63,000	1,399,000	597,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													
												104,000,000	87,900,000

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Table B4.18-1

Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

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Cost Item	Cost Type	Start Year	End Year	1992(\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	10,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	49,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (A)														
0														
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G =B+C+D+E+F)														
0														
TOTAL CAPITAL COSTS (H = A+G)														
0														

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Table B4.18-1 Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 1: No Additional Action (Provisions of FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	-	0.00	/SY	10,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	-	0.00	/SY	49,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob				Subtotal (I)			COST CODE			LLSS				
Indirects, Overhead & Profit							J = 0.033 * (I)						0	
Engineering Design							K = 0.390 * (I+J)						0	
Resident Engineering							L = 0.005 * (I+J+K)						0	
Contingency							M = 0.013 * (I+J+K)						0	
							N = 0.263 * (I+J+K+L+M)						0	
							Subtotal (O = J+K+L+M+N)						0	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Buried Sediment	A	1	30	24,000.00	/EA-YR	1	EA	1.000	1.000	1.000		27,000	822,000	435,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	96,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit				Subtotal (P)			COST CODE			LLSL				
Contingency							Q = 0.390 * (P)						13,000	
							R = 0.300 * (P+Q)						14,000	
							Subtotal (S)						27,000	
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]												34,000	1,007,000	533,000
												13,000	393,000	209,000
												14,000	420,000	222,000
												27,000	812,000	430,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)												61,000	1,819,000	964,000
														964,000

HRS: 01.W01
SOILS DAA

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Table B4.18-2
Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 2: Access Restrictions (Modifications to FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000		2,000	2,000	2,000
HB - Fences	LS	1	--	15.00	/LF	4,400	LF	1.000	1.000	1.000		75,000	75,000	75,000
Subtotal (A)													77,000	77,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G = B+C+D+E+F)													68,000	68,000
TOTAL CAPITAL COSTS (H = A+G)													145,000	145,000

Table B4.18-2 Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 2: Access Restrictions (Modifications to FTA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Habitat Modification	A	1	3	0.17	/SY	59,000	SY	1.000	1.000	1.000		11,000	11,000	11,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000		17,000	17,000	8,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects: Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Fences	A	2	30	0.75	/LF-YR	4,400	LF	1.000	1.000	1.000		4,000	109,000	57,000
HB - Habitat Modification	A	3	30	0.01	/SY-YR	59,000	SY	1.000	1.000	1.000		400	11,000	5,000
HB - Long Term Soil Monitoring, Buried Sediment	A	3	30	24,000.00	/EA-YR	1	EA	1.000	1.000	1.000		27,000	767,000	369,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (I) = J+K+L+M+N														
													24,000	17,000
Subtotal (I) = J+K+L+M+N														
													28,000	20,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Fences														
Indirects: Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (P) = Q+R+L+M+N														
													36,000	1,059,000
Subtotal (P) = Q+R+L+M+N														
													15,000	413,000
													18,000	442,000
													30,000	855,000
Subtotal (S) = T+U+V+W+X+Y+Z														
													68,000	1,967,000
Subtotal (S) = T+U+V+W+X+Y+Z														
													2,110,000	1,160,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal (U) = H+T														
													2,110,000	1,160,000

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HBS-02.W01

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Table B4.18-3 Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	180,000	BCY	1.000	1.000	1.000			1,175,000	1,175,000
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	180,000	BCY	1.000	1.000	1.000			781,000	743,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (A)														
Subtotal (B) = 0.033 * (A)														
Subtotal (C) = 0.380 * (A+B)														
Subtotal (D) = 0.030 * (A+B+C)														
Subtotal (E) = 0.013 * (A+B+C)														
Subtotal (F) = 0.263 * (A+B+C+D+E)														
Subtotal (G) = B+C+D+E+F														
Subtotal (H) = A+G														
Subtotal (I) = 1.918,000														
Subtotal (J) = 84,000														
Subtotal (K) = 787,000														
Subtotal (L) = 84,000														
Subtotal (M) = 35,000														
Subtotal (N) = 788,000														
Subtotal (O) = 1,738,000														
Subtotal (P) = 3,624,000														

HBS-03.W/01
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Table B4.18-3 Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	2	--	3.91	/BCY	180,000	BCY	1.000	1.000	1.000		803,000			785,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	180,000	BCY	1.000	2.250	1.000		465,000			471,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	180,000	BCY	1.000	1.000	1.000		836,000			796,000
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	180,000	BCY	1.000	1.000	1.000		368,000			370,000
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	180,000	BCY	1.000	1.500	1.000		265,000			252,000
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	180,000	BCY	1.000	1.000	1.000		353,000			336,000
HB - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	59,000	SY	1.000	1.000	1.000		218,000			208,000
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	59,000	SY	1.000	1.000	1.100	Disturbance	13,000			13,000
INDIRECT O&M COSTS (OPERATIONS)															
Subtotal (I)															
COST CODE															
J = 0.038 * (I)															
K = 0.403 * (I+J)															
L = 0.005 * (I+J+K)															
M = 0.015 * (I+J+K)															
N = 0.275 * (I+J+K+L+M)															
Subtotal (O = J+K+L+M+N)															
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	180,000	BCY	1.000	1.000	1.000		27,000			404,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Subtotal (P)															
COST CODE															
Q = 0.390 * (P)															
R = 0.300 * (P+Q)															
Subtotal (S)															
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]															
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															

HB-S-03.W01
SOILS DAA
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Table B4.18-6 Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
INDIRECT CAPITAL COSTS															
Mod/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (A)															
INDIRECT CAPITAL COSTS															
Mod/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															
Subtotal (G = B+C+D+E+F)															
TOTAL CAPITAL COSTS (H = A+G)															
HBS-06.W01															
SOILS DAA															

Table B4.18-6

Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	59,000	SY	1.000	1.000	1.000			4,000	4,000
HB - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	59,000	SY	1.000	1.000	1.000			1,569,000	1,569,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	59,000	SY	1.000	1.000	1.100	Disturbance		13,000	13,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Installation of Clay/Soil Cap	A	1	30	0.80	/SY-YR	59,000	SY	1.000	1.000	1.000		54,000	1,618,000	668,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal (I)														
Subtotal (P)														
Subtotal (S)														
Subtotal (T)														
Subtotal (U)														

HBS-06-W01
SOILS DAA

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Table B4.18-6g
Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob	3.3%			B = 0.033 * (A)									0	0
Indirects, Overhead & Profit	39.0%			C = 0.390 * (A+B)									0	0
Engineering Design	3.0%			D = 0.030 * (A+B+C)									0	0
Resident Engineering	1.3%			E = 0.013 * (A+B+C)									0	0
Contingency	26.3%			F = 0.263 * (A+B+C+D+E)									0	0
Subtotal (G = B+C+D+E+F)													0	0
TOTAL CAPITAL COSTS (H = A+G)														

HBS-06G.WQ1
SOILS DAA

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Table B4.18-6g Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	LS	1	--	3.91	/BCY	180,000	BCY	1.000	1.000	1.000		803,000	803,000	803,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	180,000	BCY	1.000	2.000	1.000		440,000	440,000	440,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	180,000	BCY	1.000	1.000	1.000		746,000	746,000	746,000
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	180,000	BCY	1.000	1.000	1.000		388,000	388,000	388,000
HB - Transportation of Borrow Material to Bedfill Area	LS	1	--	0.86	/BCY-MILE	180,000	BCY	1.000	1.500	1.000		265,000	265,000	265,000
HB - Bedfill with Borrow Material	LS	1	--	1.72	/BCY	180,000	BCY	1.000	1.000	1.000		353,000	353,000	353,000
HB - Installation of 6 Inches of Topsoil	LS	1	--	3.24	/SY	59,000	SY	1.000	1.000	1.000		218,000	218,000	218,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	59,000	SY	1.000	1.000	1.100	Disturbance	13,000	13,000	13,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													3,228,000	3,228,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													125,000	125,000
Engineering Design													1,307,000	1,307,000
Resident Engineering													23,000	23,000
Contingency													70,000	70,000
Subtotal (O = J+K+L+M+N)													1,307,000	1,307,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	1	30	0.00	/SY	59,000	SY	1.000	1.000	1.000		0	0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
Subtotal (S)													0	0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													6,058,000	6,058,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													6,060,000	6,060,000
HRS-04G.W01														
SOILS DAA														

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Table B4.18-13a Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1,800	BCY	1.000	1.000	1.000			12,000	11,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1,800	BCY	1.000	1.000	1.000			8,000	7,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob	COST CODE: LLSS													
Indirects, Overhead & Profit	3.3%	B = 0.033 * (A)												
Engineering Design	36.0%	C = 0.360 * (A+B)												
Resident Engineering	3.0%	D = 0.030 * (A+B+C)												
Contingency	1.3%	E = 0.013 * (A+B+C)												
	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	180,000	BCY	1.000	1.000	1.000			2,911,000	2,841,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mod/Demob	COST CODE: C													
Contractor Markup	2.0%	B1 = 0.020 * (A1)												
Engineering Design	10.0%	C1 = 0.100 * (A1+B1)												
Resident Engineering	9.0%	D1 = 0.090 * (A1+B1+C1)												
Contingency	3.0%	E1 = 0.030 * (A1+B1+C1)												
	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
												1,844,000	1,800,000	
												4,792,000	4,678,000	
HRS-13A.WQ1												16-Jul-93		
SOILS DAA														

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume		Other Factor	Description	1995 (\$)	
								Factor	Mileage			Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)													
HB - Soil Excavation	LS	3	--	3.91	/BCY	180,000	BCY	1.000	1.000	1.000	1.000	803,000	728,000
HB - Transportation of Contaminated Soil to Thermal Description Facility	LS	3	--	1.07	/BCY-MILE	180,000	BCY	1.000	1.500	1.000	1.000	330,000	289,000
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1,800	BCY	1.000	1.000	1.000	1.000	3,000	3,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1,800	BCY	1.000	1.000	1.000	1.000	2,000	2,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	1,800	BCY	1.000	1.000	1.000	1.000	8,000	8,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	180,000	BCY	1.000	1.000	1.000	1.000	283,000	238,000
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	180,000	BCY	1.000	1.500	1.000	1.000	265,000	240,000
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	180,000	BCY	1.000	1.000	1.000	1.000	353,000	320,000
HB - Installation of 6 inches of Topsoil	LS	3	--	3.24	/SY	59,000	SY	1.000	1.000	1.000	1.000	218,000	198,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	59,000	SY	1.000	1.000	1.000	1.000	13,000	12,000
Subtotal (I)												2,259,000	2,049,000
INDIRECT O&M COSTS (OPERATIONS)													
Mod/Demob													
Indirects, Overhead & Profit				3.9%								88,000	79,000
Engineering Design				39.0%								915,000	830,000
Resident Engineering				0.5%								18,000	15,000
Contingency				1.5%								49,000	44,000
				27.5%								915,000	830,000
Subtotal (O = J+K+L+M+N)												1,983,000	1,799,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
HB - Thermal Description (Dry Soil)	LS	3	--	49.13	/BCY	180,000	BCY	1.000	1.000	1.000	1.000	10,092,000	9,154,000
Subtotal (II)												10,092,000	9,154,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mod/Demob												0	0
Contractor Markup				0.0%								1,009,000	915,000
Engineering Design				10.0%								0	0
Resident Engineering				0.0%								222,000	201,000
Contingency				2.0%								4,528,000	4,106,000
				40.0%								5,780,000	5,225,000
Subtotal (OI = JI+KI+LI+MI+NI)												7,019,000	6,446,000
TOTAL O&M COSTS (OPERATIONS) (OO = IO+II+OI)												20,084,000	18,228,000
HBS-13A.WOI													
SOILS DAA													
16-Jul-93													

Table B4.18-13a Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1,800	BCY	1,000	1,000	1,000		300	7,000	4,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												100	3,000	1,000
Contingency												100	3,000	2,000
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													24,900,000	22,900,000

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Table B4.18-19a Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
INDIRECT CAPITAL COSTS															
Subtotal (A)													0		0
COST CODE: 0															
0.0%															
0.0%															
0.0%															
0.0%															
0.0%															
0.0%															
Subtotal (G = B+C+D+E+F)													0		0
DIRECT SUBCONTRACT CAPITAL COSTS															
HS - In Situ RF/Microwave Heating - Deep	LS	1	--	7,066,000.00	/UNIT	1	UNIT	1.000	1.000	1.000		8,063,000	8,063,000		8,063,000
Subtotal (A1)															
COST CODE: K															
2.0%															
6.0%															
12.0%															
1.5%															
30.0%															
Subtotal (G1 = B1+C1+D1+E1+F1)													4,900,000		4,900,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)															
Subtotal (H)															
12,864,000															

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Installation of 6 inches of Topsoil	A	1	3	3.24	/SY	59,000	SY	1.000	1.000	1.000		218,000	218,000	208,000
HB - Revegetation of Disturbed Areas	A	1	3	0.18	/SY	59,000	SY	1.000	1.000	1.000	Disturbance	13,000	13,000	13,000
Subtotal (I)														
231,000														
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit												8,000	8,000	7,000
Engineering Design												83,000	83,000	88,000
Resident Engineering												2,000	2,000	2,000
Contingency												4,000	4,000	4,000
												68,000	68,000	65,000
Subtotal (O = J+K+L+M+N)														
195,000														
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - In Site RF/Microwave Heating - Drop	A	1	3	198.66	/BCY	180,000	BCY	1.000	1.000	1.000		40,807,000	40,807,000	38,884,000
Subtotal (H)														
40,807,000														
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)														
Mod/Demob														
Contractor Markup												0	0	0
Engineering Design												2,448,000	2,448,000	2,394,000
Resident Engineering												216,000	216,000	208,000
Contingency												433,000	433,000	412,000
												17,582,000	17,582,000	16,739,000
Subtotal (O1 = J1+K1+L1+M1+N1)														
20,659,000														
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+H+O1)														
61,592,000														
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Table BA.18-19a Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	4	30	0.00	/SY	59,000	SY	1.000	1.000	1.000		0	0	0
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Contingency														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													74,800,000	71,900,000

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Table B4.19-1 Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	11,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	33,000	SY	1.000	1.000	1.000			0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
SUBTOTAL (A)														
													0	0
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
SUBTOTAL (B)														
													0	0
TOTAL CAPITAL COSTS (H + A + B)														
													0	0

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Table B4.19-1
Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	11,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	33,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													0	0
COST CODE														
J = 0.033 * (I)														
3.3%														
Indirects, Overhead & Profit													0	0
K = 0.390 * (I+J)													0	0
39.0%													0	0
Engineering Design													0	0
L = 0.005 * (I+J+K)													0	0
0.5%													0	0
Resident Engineering													0	0
M = 0.013 * (I+J+K)													0	0
1.3%													0	0
Contingency													0	0
N = 0.263 * (I+J+K+L+M)													0	0
26.3%													0	0
Subtotal (O = J+K+L+M+N)													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Sand Creek Lateral	A	1	30	23,000.00	/EA-YR	1	EA	1.000	1.000	1.000		26,000	787,000	417,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	99,000
Subtotal (P)												32,000	972,000	515,000
COST CODE														
Q = 0.390 * (P)													13,000	379,000
39.0%													14,000	405,000
Indirects, Overhead & Profit													26,000	785,000
R = 0.300 * (P+Q)													59,000	1,757,000
30.0%													831,000	931,000
Contingency														
Subtotal (S)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (T = I+O+P+S)														
Indirects, Overhead & Profit														
39.0%														
Contingency														
30.0%														
Subtotal (U = H+T)														
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

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Table B4.19-3 Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	1	--	5.72	/BCY	39,000	BCY	1.000	1.000	1.000			255,000	255,000
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	3.80	/BCY	39,000	BCY	1.000	1.000	1.000			168,000	161,000
Subtotal (A)													424,000	419,000
INDIRECT CAPITAL COSTS														
Mod/Demob	LLSS													
Indirects, Overhead & Profit	3.3%	$B = 0.033 * (A)$												
Engineering Design	38.0%	$C = 0.380 * (A+B)$												
Resident Engineering	3.0%	$D = 0.030 * (A+B+C)$												
Contingency	1.3%	$E = 0.013 * (A+B+C)$												
	26.3%	$F = 0.263 * (A+B+C+D+E)$												
Subtotal (G = B+C+D+E+F)													377,000	369,000
TOTAL CAPITAL COSTS (H = A+G)													800,000	788,000
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Cost Item	Coat Type	Start Year	End Year	1992 (\$)		Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Total Cost		PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Ditch Excavation	LS	2	--	3.82	/BCY	39,000	BCY	1.000	1.000	1.000		170,000		162,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	39,000	BCY	1.000	1.750	1.000		83,000		79,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	4.07	/BCY	39,000	BCY	1.000	1.000	1.000		181,000		173,000
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	39,000	BCY	1.000	1.000	1.000		84,000		80,000
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	39,000	BCY	1.000	1.500	1.000		57,000		55,000
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	39,000	BCY	1.000	1.000	1.000		77,000		73,000
HB - Installation of 6 inches of Topsoil	LS	2	--	3.24	/SY	44,000	SY	1.000	1.000	1.000		163,000		155,000
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	44,000	SY	1.000	1.000	1.100	Disturbance	10,000		9,000
												825,000		786,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob												32,000		30,000
Indirects, Overhead & Profit												334,000		318,000
Engineering Design												6,000		6,000
Resident Engineering												24,000		23,000
Contingency												382,000		363,000
												778,000		741,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	39,000	BCY	1.000	1.000	1.000		6,000		88,000
												168,000		
												8,000		88,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												65,000		34,000
Contingency												70,000		37,000
												5,000		71,000
												10,000		1,685,000
												1,908,000		1,685,000
												2,710,000		2,470,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												1,685,000		1,685,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												2,710,000		2,470,000
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Table B4.19-6g Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Quantity	Units	Volume			1995 (\$)			1995 (\$) PW Cost
				Unit Cost	Units			Factor	Mileage Factor	Other Factor	Annual Cost	Total Cost		
DIRECT CAPITAL COSTS														
Subtotal (A)														
COST CODE LSS														
3.3% B = 0.033 * (A)														
39.0% C = 0.390 * (A+B)														
3.0% D = 0.030 * (A+B+C)														
1.3% E = 0.013 * (A+B+C)														
28.3% F = 0.283 * (A+B+C+D+E)														
Subtotal (G =B+C+D+E+F)														
Subtotal (H = A+G)														
TOTAL CAPITAL COSTS (H = A+G)														

Table B4.19-6g Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	LS	1	--	3.91	/BCY	39,000	BCY	1.000	1.000	1.000			174,000	174,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	39,000	BCY	1.000	1,500	1.000			71,000	71,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	39,000	BCY	1.000	1.000	1.000			162,000	162,000
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	39,000	BCY	1.000	1.000	1.000			84,000	84,000
HB - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	39,000	BCY	1.000	1,500	1.000			57,000	57,000
HB - Backfill with Borrow Material	LS	1	--	1.72	/BCY	39,000	BCY	1.000	1.000	1.000			77,000	77,000
HB - Installation of 6 Inches of Topsoil	LS	1	--	3.24	/SY	44,000	SY	1.000	1.000	1.000			163,000	163,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	44,000	SY	1.000	1.000	1.100	Disturbance		10,000	10,000
												798,000	798,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	Subtotal (I)				COST CODE				MLSS					
Indirects, Overhead & Profit	J = 0.039 * (I)				K = 0.403 * (I+J)								31,000	31,000
Engineering Design	L = 0.005 * (I+J+K)												6,000	6,000
Resident Engineering	M = 0.015 * (I+J+K)												17,000	17,000
Contingency	N = 0.275 * (I+J+K+L+M)												328,000	328,000
Subtotal (O = J+K+L+M+N)												714,000	714,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	1	30	0.00	/SY	44,000	SY	1.000	1.000	1.000		0	0	0
												0	0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	Subtotal (P)				COST CODE				ULSL					
Contingency	Q = 0.390 * (P)												0	0
R = 0.300 * (P+Q)												0	0	
												0	0	0
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												0	1,511,000	1,511,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
													1,510,000	1,510,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	360	BCY	1.000	1.000	1.000			2,000	2,000		
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	360	BCY	1.000	1.000	1.000			2,000	1,000		
Subtotal (A)													4,000	4,000		
INDIRECT CAPITAL COSTS																
MOB/DEMOL																
INDIRECTS, OVERHEAD & PROFIT																
Engineering Design	3.3%														100	100
Resident Engineering	30.0%														2,000	1,000
Contingency	3.0%														200	200
													100	100		
													100	1,000		
Subtotal (G = B+C+D+E+F)													3,000	3,000		
DIRECT SUBCONTRACT CAPITAL COSTS																
HB - Thermal Desorption (Dry Soil)	A	1	2	14.17	/BCY	36,000	BCY	1.000	1.000	1.000			582,000	588,000		
Subtotal (A1)													582,000	588,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
MOB/DEMOL																
Contractor Markup	2.0%														12,000	11,000
Engineering Design	10.0%														58,000	58,000
Resident Engineering	9.0%														58,000	57,000
Contingency	3.0%														20,000	19,000
													219,000	214,000		
Subtotal (G1 = B1+C1+D1+E1+F1)													389,000	380,000		
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													958,000	935,000		
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Ditch Excavation	LS	3	--	3.82	/BCY	36,000	BCY	1.000	1.000	1.000			157,000	142,000
HB - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	36,000	BCY	1.000	1.000	1.000			44,000	40,000
HB - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	360	BCY	1.000	1.000	1.000			1,000	1,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	360	BCY	1.000	1.000	1.000			400	400
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	360	BCY	1.000	1.000	1.000			2,000	2,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	36,000	BCY	1.000	1.000	1.000			53,000	48,000
HB - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	36,000	BCY	1.000	1.000	1.000			36,000	32,000
HB - Backfill with Treated Soil	LS	3	--	1.72	/BCY	36,000	BCY	1.000	1.000	1.000			71,000	64,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	44,000	SY	1.000	1.000	1.000			163,000	148,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	44,000	SY	1.000	1.000	1.100	Disturbance		10,000	9,000
Subtotal (I)												535,000	485,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	COST CODE: MMSS													
Indirects, Overhead & Profit	4.5%	$J = 0.045 * (I)$												
Engineering Design	1.5%	$K = 0.403 * (I+J)$												
Resident Engineering	1.8%	$L = 0.015 * (I+J+K)$												
Contingency	28.8%	$M = 0.018 * (I+J+K)$												
		$N = 0.298 * (I+J+K+L+M)$												
Subtotal (O) = J+K+L+M+N												507,000	460,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
HB - Thermal Desorption (Dry Soil)	LS	3	--	49.13	/BCY	36,000	BCY	1.000	1.000	1.000			2,016,000	1,831,000
Subtotal (H)												2,018,000	1,831,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob	COST CODE: D													
Contractor Markup	0.0%	$J1 = 0.000 * (H)$												
Engineering Design	10.0%	$K1 = 0.100 * (H+J1)$												
Resident Engineering	0.0%	$L1 = 0.000 * (H+J1+K1)$												
Contingency	2.0%	$M1 = 0.020 * (H+J1+K1)$												
	40.0%	$N1 = 0.400 * (H+J1+K1+L1+M1)$												
Subtotal (D1) = J1+K1+L1+M1+N1												1,152,000	1,045,000	
TOTAL O&M COSTS (OPERATIONS) (O1) = (H+H1+D1)												4,212,000	3,821,000	

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Table B4.19-13a Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	360	BCY	1.000	1.000	1.000		100	1,000	1,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit														
38.0%														
Contingency														
30.0%														
Q = 0.390 * (P)														
R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													5,170,000	4,760,000

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Table B4.22-1 Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	120,000	SY	1,000	1,000	1,000		0	0	0
B - No Action	LS	1	--	0.00	/SY	520,000	SY	1,000	1,000	1,000		0	0	0
A - No Action	LS	1	--	0.00	/SY	89,000	SY	1,000	1,000	1,000		0	0	0
U - No Action	LS	1	--	0.00	/SY	210,000	SY	1,000	1,000	1,000		0	0	0
Subtotal (A)													0	0
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B)													0	0
Subtotal (G =B+C+D+E+F)													0	0

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	120,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	520,000	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	/SY	89,000	SY	1.000	1.000	1.000			0	0
U - No Action	LS	1	--	0.00	/SY	210,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Section 36 Balance of Areas	A	1	30	127,000.00	/EA-YR	1	EA	1.000	1.000	1.000		145,000	4,348,000	2,304,000
HBAU - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													58,000	937,000
Contingency													63,000	1,002,000
TOTAL O&M COSTS (T = I+O+P+S)														
												151,000	4,533,000	2,402,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
												273,000	8,191,000	4,341,000
												8,190,000	4,340,000	

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Public Education	LS	1	--	1,500.00	/EA	1	EA	1.000	1.000	1.000			2,000	2,000
A - No Action	LS	1	--	0.00	/SY	89,000	SY	1.000	1.000	1.000			0	0
U - No Action	LS	1	--	0.00	/SY	210,000	SY	1.000	1.000	1.000			0	0
HB - Fences	LS	1	--	15.00	/LF	11,000	LF	1.000	1.000	1.000			166,000	166,000
													190,000	190,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mob/Demob				3.3%							LISS		6,000	6,000
Indirects, Overhead & Profit				36.0%									77,000	77,000
Engineering Design				3.0%									8,000	8,000
Resident Engineering				1.3%									3,000	3,000
Contingency				26.3%									75,000	75,000
													169,000	169,000
Subtotal (G =B+C+D+E+F)														
													359,000	359,000
TOTAL CAPITAL COSTS (H + A+G)														

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Habitat Modification	A	1	3	0.17	/SY	640,000	SY	1.000	1.000	1.000			123,000	118,000
H - Public Education	A	1	30	500.00	/EA-YR	1	EA	1.000	1.000	1.000			17,000	9,000
A - No Action	LS	1	--	0.00	/SY	89,000	SY	1.000	1.000	1.000			0	0
U - No Action	LS	1	--	0.00	/SY	210,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													141,000	127,000
Indirects, Overhead & Profit													5,000	4,000
Engineering Design													57,000	51,000
Resident Engineering													1,000	1,000
Contingency													3,000	2,000
													54,000	48,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Fences	A	2	30	0.75	/LF-YR	11,000	LF	1.000	1.000	1.000		9,000	273,000	143,000
HB - Habitat Modification	A	3	30	0.01	/SY-YR	640,000	SY	1.000	1.000	1.000		4,000	117,000	58,000
HB - Long Term Soil Monitoring, Section 36 Balance of Areas	A	3	30	127,000.00	/EA-YR	1	EA	1.000	1.000	1.000		145,000	4,058,000	2,058,000
HB/AU - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
													119,000	107,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													165,000	2,345,000
Contingency													64,000	915,000
													69,000	978,000
													133,000	1,893,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												298,000	9,608,000	4,472,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													8,970,000	4,930,000

Table B4.22-3 Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Section 36 Balance of Areas	LS	1	--	344,499.00	/EA	1	EA	1.000	1.000	1.000		383,000	383,000	383,000
HB - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	390,000	BCY	1.000	1.000	1.000		2,546,000	2,546,000	2,424,000
HB - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	390,000	BCY	1.000	1.000	1.000		1,691,000	1,691,000	1,534,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000		20	20	20
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1.000	1.000	1.000		10	10	10
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	70,000	BCY	1.000	1.000	1.000		345,000	345,000	328,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	70,000	BCY	1.000	1.000	1.000		286,000	286,000	268,000
Subtotal (A)												5,271,000	5,271,000	4,948,000
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit												204,000	204,000	192,000
Engineering Design												2,087,000	2,087,000	1,940,000
Resident Engineering												338,000	338,000	319,000
Contingency												113,000	113,000	106,000
												2,198,000	2,198,000	2,084,000
Subtotal (G = B+C+D+E+F)												4,922,000	4,922,000	4,621,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	270	BCY	1.000	1.000	1.000		11,000	11,000	11,000
Subtotal (A1)												11,000	11,000	11,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob														
Contractor Markup												200	200	200
Engineering Design												1,000	1,000	1,000
Resident Engineering												1,000	1,000	1,000
Contingency												400	400	400
												4,000	4,000	4,000
Subtotal (G1 = B1+C1+D1+E1+F1)												6,600	6,600	6,600
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												10,211,000	10,211,000	9,587,000

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Table B4.22-3 Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Factor	Volume Mileage	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Excavation Dewatering, Section 36 Balance of Areas	A	1	3	169,385.00	/EA-YR	EA	1	1.000	1.000	1.000		580,000		580,000		553,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	BCY	390,000	1.000	1.000	1.000		1,740,000		1,740,000		1,578,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	BCY	390,000	1.000	1.000	1.000		714,000		714,000		648,000
HB - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	BCY	390,000	1.000	1.000	1.000		1,811,000		1,811,000		1,643,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	BCY	390,000	1.000	1.000	1.000		841,000		841,000		763,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	BCY	390,000	1.000	1.000	1.000		574,000		574,000		521,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	BCY	390,000	1.000	1.000	1.000		785,000		785,000		694,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	SY	640,000	1.000	1.000	1.000		2,366,000		2,366,000		2,146,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	SY	640,000	1.000	1.000	1.000	Disturbance	145,000		145,000		131,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	SY	89,000	1.000	1.000	1.000		497,000		497,000		450,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	BCY	270	1.000	1.000	1.000		1,000		1,000		1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	BCY	270	1.000	1.000	1.000		300		300		300
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	BCY	3	1.000	1.000	1.000		10		10		5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	BCY	3	1.000	1.000	1.000		4		4		3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	BCY	3	1.000	1.000	1.000		10		10		10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	BCY	270	1.000	1.000	1.000		400		400		400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	BCY	270	1.000	1.000	1.000		300		300		200
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	BCY	270	1.000	1.000	1.000		1,000		1,000		500
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	SY	210,000	1.000	1.000	1.000		204,000		204,000		184,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	BCY	140	1.000	1.000	1.000		11,000		11,000		10,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	BCY	70,000	1.000	1.000	1.000	Productivity	408,000		408,000		368,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	BCY	70,000	1.000	1.000	1.300	Productivity	74,000		74,000		67,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	BCY	70,000	1.000	1.000	1.000		325,000		325,000		295,000
Subtotal (I)												11,057,000		11,057,000		10,085,000
INDIRECT O&M COSTS (OPERATIONS)																
MOB/DEMOL				5.1%	J = 0.061 * (I)							567,000		567,000		516,000
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)							4,678,000		4,678,000		4,259,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							245,000		245,000		223,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							326,000		326,000		297,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)							5,273,000		5,273,000		4,900,000
Subtotal (O = J+K+L+M+N)												11,088,000		11,088,000		10,094,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
A - Incineration	LS	3	--	96.24	/BCY	BCY	270	1.000	1.000	1.000		30,000		30,000		27,000
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	BCY	140	1.000	1.000	1.000		351,000		351,000		318,000
Subtotal (I)												381,000		381,000		348,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
MOB/DEMOL				0.0%	J1 = 0.000 * (I1)							0		0		0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							38,000		38,000		35,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0		0		0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							8,000		8,000		6,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							171,000		171,000		155,000
Subtotal (O1 = J1+K1+L1+M1+N1)												218,000		218,000		197,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)																
												22,744,000		22,744,000		20,702,000

Table B4.22-3 Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
HB - On-Post Hazardous Waste Landfill Closure	A	3	30		0.13	/BCY-YR	390,000	BCY	1.000	1.000	1.000		56,000	1,620,000		621,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30		0.13	/BCY-YR	3	BCY	1.000	1.000	1.000		0	10		10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30		0.13	/BCY-YR	70,000	BCY	1.000	1.000	1.000		10,000	281,000		147,000
Subtotal (P)													66,000	1,911,000		968,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Indirects, Overhead & Profit													27,000	745,000		378,000
Contingency													26,000	797,000		404,000
Subtotal (S = Q+R)													53,000	1,542,000		781,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													123,000	3,453,000		1,750,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)																
														36,400,000		32,000,000

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Table B4.22-6g Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Section 36 Balance of Areas	LS	1	--	344,499.00	/EA	1	EA	1.000	1.000	1.000			344,499	344,499
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000			17.16	17.16
U - On-Post Solid Waste Landfill	LS	2	--	3.80	/BCY	3	BCY	1.000	1.000	1.000			11.40	11.40
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	2	--	4.32	/BCY	70,000	BCY	1.000	1.000	1.000			302,400	302,400
	LS	3	--	3.70	/BCY	70,000	BCY	1.000	1.000	1.000			259,000	259,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
COST CODE: MMS														
Mob/Demob				4.5%										
Indirects, Overhead & Profit				40.3%										
Engineering Design				4.5%										
Resident Engineering				1.8%										
Contingency				28.8%										
Subtotal (G = B+C+D+E+F)														
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	270	BCY	1.000	1.000	1.000			11,000	11,000
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob				2.0%										
Contractor Markup				10.0%										
Engineering Design				8.0%										
Resident Engineering				3.0%										
Contingency				30.0%										
Subtotal (G1 = B1+C1+D1+E1+F1)														
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
													2,091,000	2,093,000

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Table B4.22-6g Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation Dewatering, Section 36 Balance of Areas	A	1	3	169,385.00	/EA-YR	1	EA	1.000	1.000	1.000		590,000	590,000	553,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	390,000	BCY	1.000	1.000	1.000		1,740,000	1,740,000	1,578,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	1.07	/BCY-MILE	390,000	BCY	1.000	0.500	1.000		238,000	238,000	216,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	3.63	/BCY	390,000	BCY	1.000	1.000	1.000		1,816,000	1,816,000	1,485,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	390,000	BCY	1.000	1.000	1.000		841,000	841,000	763,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	390,000	BCY	1.000	1.500	1.000		574,000	574,000	521,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	390,000	BCY	1.000	1.000	1.000		765,000	765,000	694,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	640,000	SY	1.000	1.000	1.000		2,366,000	2,366,000	2,146,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	640,000	SY	1.000	1.000	1.000	Disturbance	145,000	145,000	131,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	89,000	SY	1.000	1.000	1.000		487,000	487,000	450,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	270	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	270	BCY	1.000	1.000	1.000		300	300	300
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3	BCY	1.000	1.000	1.000	Disturbance	10	10	5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3	BCY	1.000	1.000	1.000		4	4	3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	3	BCY	1.000	1.000	1.000		10	10	10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	270	BCY	1.000	1.000	1.000		400	400	400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	270	BCY	1.000	1.000	1.000		300	300	200
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	270	BCY	1.000	1.000	1.000		1,000	1,000	500
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	210,000	SY	1.000	1.000	1.000		204,000	204,000	194,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	140	BCY	1.000	1.000	1.000		11,000	11,000	10,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	70,000	BCY	1.000	1.000	1.300	Productivity	408,000	408,000	368,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	70,000	BCY	1.000	1.500	1.300	Productivity	111,000	111,000	100,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	70,000	BCY	1.000	1.000	1.000		325,000	325,000	295,000
Subtotal (I)														
10,422,000 9,489,000														
INDIRECT O&M COSTS (OPERATIONS)														
COST CODE: HMLS														
Mob/Demob	J = 0.051 * (I)													
Indirects, Overhead & Profit	K = 0.380 * (I+J)													
Engineering Design	L = 0.015 * (I+J+K)													
Resident Engineering	M = 0.020 * (I+J+K)													
Contingency	N = 0.313 * (I+J+K+L+M)													
Subtotal (O = J+K+L+M+N)														
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	96.24	/BCY	270	BCY	1.000	1.000	1.000		30,000	30,000	27,000
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	140	BCY	1.000	1.000	1.000		351,000	351,000	319,000
Subtotal (I1)														
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)														
COST CODE: D														
Mob/Demob	J1 = 0.000 * (I1)													
Contractor Markup	K1 = 0.100 * (I1+J1)													
Engineering Design	L1 = 0.000 * (I1+J1+K1)													
Resident Engineering	M1 = 0.020 * (I1+J1+K1)													
Contingency	N1 = 0.400 * (I1+J1+K1+L1+M1)													
Subtotal (O1 = J1+K1+L1+M1+N1)														
TOTAL O&M COSTS (OPERATIONS) [OO = (I+O1)+I+O1]														
381,000 346,000														
0 0														
36,000 35,000														
0 0														
8,000 8,000														
171,000 155,000														
218,000 197,000														
21,286,000 19,378,000														
16-Jul-93														

Table B4.22-6g
Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
HB - No Action													
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	/SY	640,000	SY	1,000	1,000	1,000		0	0	0
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	/BCY-YR	70,000	BCY	1,000	1,000	1,000		10,000	291,000	147,000
				/BCY-YR	3	BCY	1,000	1,000	1,000		0	10	10
Subtotal (P)											10,000	291,000	147,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
COST CODE: LLSL													
Indirects, Overhead & Profit											4,000	113,000	57,000
Contingency											4,000	121,000	61,000
Subtotal (S = Q+R)											8,000	225,000	119,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)											18,000	525,000	286,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)												23,900,000	21,600,000

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Table B4.22-13a Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 13a: Direct Thermal Desorption (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Section 36 Balance of Areas	LS	1	--	344,499.00	/EA	1	EA	1.000	1.000	1.000			363,000	363,000
HB - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3,900	BCY	1.000	1.000	1.000			25,000	24,000
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	3.80	/BCY	3,900	BCY	1.000	1.000	1.000			17,000	15,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000			20	20
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1.000	1.000	1.000			10	10
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	70,000	BCY	1.000	1.000	1.000			345,000	329,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	70,000	BCY	1.000	1.000	1.000			298,000	288,000
Subtotal (A)													1,078,000	1,029,000
INDIRECT CAPITAL COSTS														
COST CODE: LMMS														
Mob/Demob	3.8%	B = 0.039 * (A)												
Indirects, Overhead & Profit	37.8%	C = 0.378 * (A+B)												
Engineering Design	4.5%	D = 0.045 * (A+B+C)												
Resident Engineering	1.5%	E = 0.015 * (A+B+C)												
Contingency	27.5%	F = 0.275 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,005,000	981,000
DIRECT SUBCONTRACT CAPITAL COSTS														
HB - Thermal Desorption (Saturated Soil)	LS	2	--	14.17	/BCY	390,000	BCY	1.000	1.000	1.000			6,308,000	6,008,000
A - Incineration	A	1	2	36.37	/BCY	270	BCY	1.000	1.000	1.000			11,000	11,000
Subtotal (A1)													6,319,000	6,017,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													4,003,000	3,813,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													12,402,000	11,819,000

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Table B4.22-13a Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Excavation Dewatering Section 36 Balance of Areas	A	1	3	169,385.00	/EA-YR	EA	1	EA	1.000	1.000	1.000	1.000	580,000	580,000	580,000	553,000
HB - Soil Excavation	A	3	4	3.91	/BCY	BCY	390,000	BCY	1.000	1.000	1.000	1.000	1,740,000	1,740,000	1,740,000	1,541,000
HB - Transportation of Contaminated Soil to Thermal Description Facility	A	3	4	1.07	/BCY-MILE	BCY	390,000	BCY	1.000	1.000	1.000	1.000	476,000	476,000	476,000	422,000
HB - Load Treated Soil for Transport to Hazardous Landfill	A	3	4	1.55	/BCY	BCY	3,900	BCY	1.000	1.000	1.000	1.000	7,000	7,000	7,000	6,000
HB - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	1.07	/BCY-MILE	BCY	3,900	BCY	1.000	1.000	1.000	1.000	5,000	5,000	5,000	4,000
HB - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	4.07	/BCY	BCY	3,900	BCY	1.000	1.000	1.000	1.000	16,000	16,000	16,000	16,000
HB - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	1.28	/BCY	BCY	390,000	BCY	1.000	1.000	1.000	1.000	570,000	570,000	570,000	504,000
HB - Transportation of Treated Soil to Backfill Excavation	A	3	4	0.86	/BCY-MILE	BCY	390,000	BCY	1.000	1.000	1.000	1.000	383,000	383,000	383,000	339,000
HB - Backfill with Treated Soil	A	3	4	1.72	/BCY	BCY	390,000	BCY	1.000	1.000	1.000	1.000	765,000	765,000	765,000	678,000
HB - Installation of 6 Inches of Topsoil	A	3	4	3.24	/SY	SY	640,000	SY	1.000	1.000	1.000	1.000	2,366,000	2,366,000	2,366,000	2,095,000
HB - Revegetation of Disturbed Areas	A	3	4	0.18	/SY	SY	640,000	SY	1.000	1.000	1.000	1.000	145,000	145,000	145,000	128,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	SY	89,000	SY	1.000	1.000	1.000	1.000	497,000	497,000	497,000	473,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	BCY	270	BCY	1.000	1.000	1.000	1.000	1,000	1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	BCY	270	BCY	1.000	1.000	1.000	1.000	300	300	300	300
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	BCY	3	BCY	1.000	1.000	1.000	1.000	10	10	10	5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	BCY	3	BCY	1.000	1.000	1.000	1.000	4	4	4	3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	BCY	3	BCY	1.000	1.000	1.000	1.000	10	10	10	10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	BCY	270	BCY	1.000	1.000	1.000	1.000	400	400	400	400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	BCY	270	BCY	1.000	1.000	1.000	1.000	300	300	300	200
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	BCY	270	BCY	1.000	1.000	1.000	1.000	1,000	1,000	1,000	500
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	SY	210,000	SY	1.000	1.000	1.000	1.000	204,000	204,000	204,000	194,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	BCY	140	BCY	1.000	1.000	1.000	1.000	11,000	11,000	11,000	10,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	BCY	70,000	BCY	1.000	1.000	1.300	Productivity	408,000	408,000	408,000	368,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	BCY	70,000	BCY	1.000	1.500	1.300	Productivity	111,000	111,000	111,000	100,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	BCY	70,000	BCY	1.000	1.000	1.000	1.000	325,000	325,000	325,000	295,000
Subtotal (f)													8,611,000	8,611,000	8,611,000	7,729,000
INDIRECT O&M COSTS (OPERATIONS)																
Mob/Demob				5.1%	J = 0.051 * (f)								441,000	441,000	441,000	398,000
Indirects, Overhead & Profit				39.0%	K = 0.390 * (f-J)								3,530,000	3,530,000	3,530,000	3,169,000
Engineering Design				1.5%	L = 0.015 * (f-J+K)								188,000	188,000	188,000	168,000
Resident Engineering				2.0%	M = 0.020 * (f-J+K)								252,000	252,000	252,000	228,000
Contingency				31.3%	N = 0.313 * (f-J+K+L+M)								4,070,000	4,070,000	4,070,000	3,653,000
Subtotal (D = J+K+L+M+N)													8,492,000	8,492,000	8,492,000	7,613,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
HB - Thermal Description (Saturated Soil)	A	3	4	73.64	/BCY	BCY	390,000	BCY	1.000	1.000	1.000	1.000	32,774,000	32,774,000	32,774,000	28,019,000
A - Incineration	LS	3	--	96.24	/BCY	BCY	270	BCY	1.000	1.000	1.000	1.000	30,000	30,000	30,000	27,000
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	BCY	140	BCY	1.000	1.000	1.000	1.000	351,000	351,000	351,000	319,000
Subtotal (f1)													33,155,000	33,155,000	33,155,000	29,365,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
Mob/Demob				0.0%	J1 = 0.000 * (f1)								0	0	0	0
Contractor Markup				10.0%	K1 = 0.100 * (f1-J1)								3,315,000	3,315,000	3,315,000	2,936,000
Engineering Design				0.0%	L1 = 0.000 * (f1-J1+K1)								0	0	0	0
Resident Engineering				2.0%	M1 = 0.020 * (f1-J1+K1)								729,000	729,000	729,000	648,000
Contingency				40.0%	N1 = 0.400 * (f1-J1+K1+L1+M1)								14,990,000	14,990,000	14,990,000	13,179,000
Subtotal (D1 = J1+K1+L1+M1+N1)													18,925,000	18,925,000	18,925,000	16,761,000
TOTAL O&M COSTS (OPERATIONS) (D0 = f+f1+D1)													69,173,000	69,173,000	69,173,000	61,469,000

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Table B4.22-13a Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 13a: Direct Thermal Description (Direct Heating)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/BCY-YR	3,900	BCY	1,000	1,000	1,000		1,000	18,000	8,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3	BCY	1,000	1,000	1,000		0	10	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	70,000	BCY	1,000	1,000	1,000		10,000	291,000	147,000
Subtotal (P)														
												11,000	306,000	155,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												4,000	119,000	60,000
Contingency												5,000	128,000	65,000
Subtotal (S = Q+R)														
												9,000	247,000	125,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												20,000	554,000	280,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													82,100,000	73,600,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1993 (\$) Total Cost	1993 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Section 36 Balance of Areas	LS	1	--	344,490.00	/EA	1	EA	1.000	1.000	1.000			344,000	344,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	3	BCY	1.000	1.000	1.000			20	20
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	3	BCY	1.000	1.000	1.000			10	10
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	70,000	BCY	1.000	1.000	1.000			345,000	329,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	70,000	BCY	1.000	1.000	1.000			296,000	268,000
Subtotal (A)													1,034,000	890,000
INDIRECT CAPITAL COSTS														
MOB/DEMOL														
Indirects Overhead & Profit													40,000	36,000
Engineering Design													419,000	401,000
Resident Engineering													67,000	64,000
Contingency													22,000	21,000
													435,000	417,000
Subtotal (G = B+C+D+E+F)													894,000	842,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - In Situ RF/Microwave Heating - Deep/Saturated	LS	1	--	7,066,000.00	/UNIT	1	UNIT	1.000	1.000	1.000			8,083,000	8,083,000
B - In Situ RF/Microwave Heating - Shallow/Saturated	LS	1	--	7,066,000.00	/UNIT	1	UNIT	1.000	1.000	1.000			8,083,000	8,083,000
B - In Situ Surface Soil Heating	LS	1	--	951,200.00	/UNIT	1	UNIT	1.000	1.000	1.000			1,085,000	1,085,000
A - Incineration	A	1	2	36.37	/BCY	270	BCY	1.000	1.000	1.000			11,000	11,000
Subtotal (A1)													17,224,000	17,223,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
MOB/DEMOL														
Contractor Markup													344,000	344,000
Engineering Design													1,054,000	1,054,000
Resident Engineering													2,235,000	2,235,000
Contingency													279,000	279,000
													6,341,000	6,341,000
Subtotal (G1 = B1+C1+D1+E1+F1)													10,253,000	10,253,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													29,494,000	29,493,000

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Table B4.22-19a Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 19a: In Situ Thermal Treatment (RF/Microwave Heating)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Excavation Dewatering, Section 36 Balance of Areas	A	1	15	169,385.00	/EA-YR		1	EA	1.000	1.000	1.000			2,889,000	2,107,000	
HB - Installation of 6 Inches of Topsoil	A	1	15	3.24	/SY		640,000	SY	1.000	1.000	1.000			2,368,000	1,719,000	
HB - Revegetation of Disturbed Areas	A	1	15	0.18	/SY		640,000	SY	1.000	1.000	1.000	Disturbance		145,000	105,000	
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY		89,000	SY	1.000	1.000	1.000			497,000	473,000	
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY		270	BCY	1.000	1.000	1.000			1,000	300	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE		270	BCY	1.000	1.000	1.000			1,000	300	
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY		3	BCY	1.000	1.000	1.000			10	5	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE		3	BCY	1.000	1.000	1.000			4	3	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY		3	BCY	1.000	1.000	1.000			10	10	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY		270	BCY	1.000	1.000	1.000			400	400	
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE		270	BCY	1.000	1.000	1.000			300	200	
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY		270	BCY	1.000	1.000	1.000			1,000	500	
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY		210,000	SY	1.000	1.000	1.000			204,000	194,000	
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY		140	BCY	1.000	1.000	1.000			11,000	10,000	
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY		70,000	BCY	1.000	1.000	1.300	Productivity		406,000	368,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE		70,000	BCY	1.000	1.500	1.300	Productivity		111,000	100,000	
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY		70,000	BCY	1.000	1.000	1.000			325,000	295,000	
Subtotal (I)														6,987,000	5,374,000	
INDIRECT O&M COSTS (OPERATIONS)																
Mob/Demob					4.5%											
Indirects: Overhead & Profit					40.3%									314,000	242,000	
Engineering Design					1.5%									2,890,000	2,261,000	
Resident Engineering					2.3%									153,000	118,000	
Contingency					32.5%									230,000	177,000	
Subtotal (O = J+K+L+M+N)														3,443,000	2,656,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																
H - In Situ RF/Microwave Heating - Deep/Saturated	A	1	4	229.41	/BCY		150,000	BCY	1.000	1.000	1.000			36,288,000	36,552,000	
B - In Situ RF/Microwave Heating - Shallow/Saturated	A	1	5	251.59	/BCY		180,000	BCY	1.000	1.000	1.000			51,679,000	46,988,000	
B - In Situ Surface Soil Heating	A	1	22	27.30	/SY		360,000	SY	1.000	1.000	1.000			11,215,000	7,046,000	
A - Incineration	LS	3	--	96.24	/BCY		270	BCY	1.000	1.000	1.000			30,000	27,000	
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY		140	BCY	1.000	1.000	1.000			351,000	319,000	
Subtotal (I1)														102,545,000	80,930,000	
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)																
Mob/Demob					0.0%									0	0	
Contractor Markup					6.0%									6,153,000	5,456,000	
Engineering Design					0.5%									543,000	482,000	
Resident Engineering					1.0%									1,087,000	964,000	
Contingency					40.0%									44,131,000	36,133,000	
Subtotal (O1 = J1+K1+L1+M1+N1)														51,914,000	46,034,000	
Subtotal (O1 = J1+K1+L1+M1+N1)														168,495,000	147,792,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O1+O11)																
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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	4	30	0.00	/SY	120,000	SY	1,000	1,000	1,000		0	0	0
B - No Action	A	22	30	0.00	/SY	520,000	SY	1,000	1,000	1,000		0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3	BCY	1,000	1,000	1,000		0	10	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	70,000	BCY	1,000	1,000	1,000		10,000	281,000	147,000
Subtotal (P)												10,000	281,000	147,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects Overhead & Profit												4,000	113,000	57,000
Contingency												4,000	121,000	61,000
Subtotal (S = Q+R)												8,000	235,000	118,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												18,000	525,000	266,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)												199,000,000 177,000,000		

Table B4.23-1 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - No Action	LS	1	--	0.00	/SY	43,000	SY	1,000	1,000	1,000			0	0
B - No Action	LS	1	--	0.00	/SY	80	SY	1,000	1,000	1,000			0	0
A - No Action	LS	1	--	0.00	/SY	7,100	SY	1,000	1,000	1,000			0	0
U - No Action	LS	1	--	0.00	/SY	170,000	SY	1,000	1,000	1,000			0	0
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G) = B+C+D+E+F														
TOTAL CAPITAL COSTS (H) = A+G														
Subtotal (H) = A+G														

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Table B4.23-1 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 1: No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - No Action	LS	1	--	0.00	/SY	43,000	SY	1.000	1.000	1.000			0	0
B - No Action	LS	1	--	0.00	/SY	80	SY	1.000	1.000	1.000			0	0
A - No Action	LS	1	--	0.00	/SY	7,100	SY	1.000	1.000	1.000			0	0
U - No Action	LS	1	--	0.00	/SY	170,000	SY	1.000	1.000	1.000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (I) = J+K+L+M+N														
													0	0
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - Long Term Soil Monitoring, Burial Trenches	A	1	30	22,000.00	/EA-YR	1	EA	1.000	1.000	1.000		25,000	753,000	369,000
HBAU - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
Subtotal (P) = Q+R+L+M+N														
													0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit														
Contingency														
Subtotal (S) = T+U+P+S														
													31,000	938,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													12,000	366,000
													13,000	381,000
													25,000	757,000
Subtotal (S) = T+U+P+S														
													57,000	1,695,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													1,700,000	898,000

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Table BA.23-3 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	2	--	5.72	/BCY	31,000	BCY	1,000	1,000	1,000		202,000	183,000	183,000
HB - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	/BCY	31,000	BCY	1,000	1,000	1,000		134,000	122,000	122,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	/BCY	1	BCY	1,000	1,000	1,000		10	10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	/BCY	1	BCY	1,000	1,000	1,000		4	4	4
U - On-Post Solid Waste Landfill	LS	2	--	4.32	/BCY	57,000	BCY	1,000	1,000	1,000		281,000	288,000	288,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	3.70	/BCY	57,000	BCY	1,000	1,000	1,000		241,000	218,000	218,000
Subtotal (A)												858,000	801,000	
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												783,000	712,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	36.37	/BCY	12	BCY	1,000	1,000	1,000		500	500	500
Subtotal (A1)												500	500	
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												300	300	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												1,622,000	1,513,000	

Table B4.23-3 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	3	--	3.91	/BCY	31,000	BCY	1,000	1,000	1,300	Productivity	180,000			183,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	31,000	BCY	1,000	2,500	1,300	Productivity	123,000			112,000
HB - On-Post Hazardous Waste Landfill	LS	3	--	4.07	/BCY	31,000	BCY	1,000	1,000	1,000		144,000			131,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	31,000	BCY	1,000	1,000	1,000		67,000			61,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	31,000	BCY	1,000	1,500	1,000		48,000			41,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	31,000	BCY	1,000	1,000	1,000		61,000			55,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	43,000	SY	1,000	1,000	1,000		159,000			144,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	43,000	SY	1,000	1,000	1,100	Disturbance	10,000			9,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	7,100	SY	1,000	1,000	1,000		40,000			36,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	12	BCY	1,000	1,000	1,000		100			100
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	12	BCY	1,000	3,500	1,000		100			50
A - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	1	BCY	1,000	1,000	1,000		2			2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000		1			1
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	1	BCY	1,000	1,000	1,000		1			1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	12	BCY	1,000	1,000	1,000		100			100
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	12	BCY	1,000	3,500	1,000		40			40
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	12	BCY	1,000	1,000	1,000		20			20
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	170,000	SY	1,000	1,000	1,000		165,000			157,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	550	BCY	1,000	1,000	1,000		44,000			40,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	57,000	BCY	1,000	1,000	1,300	Productivity	331,000			300,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	57,000	BCY	1,000	2,500	1,300	Productivity	150,000			136,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	57,000	BCY	1,000	1,000	1,000		265,000			240,000
U - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	110,000	SY	1,000	1,000	1,000		407,000			368,000
U - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	110,000	SY	1,000	1,000	1,100	Disturbance	25,000			23,000
Subtotal (I)															
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				5.1%	J = 0.051 * (I)							114,000			103,000
Indirects, Overhead & Profit				40.3%	K = 0.403 * (I+J)							937,000			853,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							49,000			45,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							65,000			59,000
Contingency				31.5%	N = 0.315 * (I+J+K+L+M)							1,056,000			962,000
Subtotal (O) = J+K+L+M+N															
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
A - Incineration	LS	3	--	96.24	/BCY	12	BCY	1,000	1,000	1,000		1,000			1,000
U - Packaging and Transportation of HE Filled UXO to Army Off-Post Facility	LS	3	--	59.50	/BCY	550	BCY	1,000	1,000	1,000		37,000			34,000
Subtotal (I1)															
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mob/Demob				0.0%	J1 = 0.000 * (I1)							0			0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)							4,000			4,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)							0			0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)							1,000			1,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)							17,000			16,000
Subtotal (O1) = J1+K1+L1+M1+N1															
TOTAL O&M COSTS (OPERATIONS) [OO = I+O+I1+O1]															
												22,000			20,000
												4,497,000			4,094,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	31,000	BCY	1,000	1,000	1,000		5,000	128,000	66,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000		0	4	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	57,000	BCY	1,000	1,000	1,000		8,000	237,000	120,000
Subtotal (P)												13,000	388,000	185,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	COST CODE: LLSL $Q = 0.380 * (P)$ 38.0%													
Contingency	$R = 0.300 * (P+Q)$ 30.0%													
Subtotal (S = Q+R)												11,000	285,000	148,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												24,000	681,000	335,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													6,780,000	5,940,000

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Table B4.23-6 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 6: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance In Surface Soil by Geophysics	LS	1	--	0.24	/SY	170,000	SY	1,000	1,000	1,000			47,000	47,000
HBAU - Excavation of Borrow Material	LS	1	--	1.89	/RCY	1,400	BCY	1,000	1,000	1,000			3,000	3,000
HBAU - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/RCY-MILE	1,400	BCY	1,000	1,000	1,000			1,000	1,000
HBAU - Backfill with Borrow Material	LS	1	--	1.72	/RCY	1,400	BCY	1,000	1,000	1,000			3,000	3,000
HBAU - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	43,000	SY	1,000	1,000	1,000			3,000	3,000
HBAU - Installation of Clay/Soil Cap	LS	1	--	23.30	/SY	43,000	SY	1,000	1,000	1,000			1,143,000	1,143,000
HBAU - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	43,000	SY	1,000	1,000	1,000	Disturbance		10,000	10,000
U - Soil Cover for Potential UXO Areas	LS	1	--	9.36	/SY	110,000	SY	1,000	1,000	1,000			1,175,000	1,175,000
U - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	110,000	SY	1,000	1,000	1,100	Disturbance		25,000	25,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													2,408,000	2,408,000
MOB/DEMOL														
Indirects, Overhead & Profit													78,000	78,000
Engineering Design													17,000	17,000
Resident Engineering													43,000	43,000
Contingency													924,000	924,000
Subtotal (O = J+K+L+M+N)													2,033,000	2,033,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HBAU - Installation of Clay/Soil Cap	A	1	30	0.80	/SY-YR	43,000	SY	1,000	1,000	1,000		39,000	1,178,000	624,000
HBAU - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)												45,000	1,363,000	722,000
Indirects, Overhead & Profit												18,000	531,000	282,000
Contingency												19,000	568,000	301,000
Subtotal (S)												37,000	1,100,000	583,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												82,000	6,904,000	5,747,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													6,900,000	5,750,000

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Table B4.23-10 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS												
B - On-Post Hazardous Waste Landfill	LS	2	--	5.72	130	BCY	1.000	1.000		1,000	1,000	1,000
B - On-Post Hazardous Waste Landfill Closure	LS	3	--	3.80	130	BCY	1.000	1.000		1,000	1,000	1,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	5.72	1	BCY	1.000	1.000		10	10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	3.80	1	BCY	1.000	1.000		4	4	4
U - On-Post Solid Waste Landfill	LS	2	--	4.32	57,000	BCY	1.000	1.000		241,000	241,000	241,000
U - On-Post Solid Waste Landfill Closure and Post Closure Activities	LS	3	--	3.70	57,000	BCY	1.000	1.000		218,000	218,000	218,000
Subtotal (A)											532,000	487,000
INDIRECT CAPITAL COSTS												
COST CODE: LLSS												
Mod/Demob	3.3%	B = 0.033 * (A)										
Indirects, Overhead & Profit	30.0%	C = 0.300 * (A+B)										
Engineering Design	3.0%	D = 0.030 * (A+B+C)										
Resident Engineering	1.3%	E = 0.013 * (A+B+C)										
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)										
Subtotal (G = B+C+D+E+F)											465,000	433,000
DIRECT SUBCONTRACT CAPITAL COSTS												
H - Cement-Based Solidification	LS	2	--	3.35	31,000	BCY	1.000	1.000		119,000	119,000	113,000
A - Incineration	A	1	2	36.37	12	BCY	1.000	1.000		500	500	500
Subtotal (A1)											119,000	113,000
INDIRECT SUBCONTRACT CAPITAL COSTS												
COST CODE: C												
Mod/Demob	2.0%	B1 = 0.020 * (A1)										
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)										
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)										
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)										
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)										
Subtotal (G1 = B1+C1+D1+E1+F1)											75,000	72,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)											1,182,000	1,108,000

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Table B4.23-10 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Unit Cost (\$)	Units	Quantity	Volume Mileage Factor	Other Factor	Description	Annual Cost (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)													
H - Soil Excavation	LS	3	--	3.91	/BCY	31,000	1.00	1.00	Productivity	122,730	180,000	180,000	163,000
H - Transportation of Contaminated Soil to Solidification Facility	A	3	5	1.07	/BCY-MILE	31,000	1.00	1.00	Productivity	33,170	172,000	172,000	149,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	1.28	/BCY	31,000	1.00	1.00	Productivity	39,680	54,000	54,000	47,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	5	0.86	/BCY-MILE	31,000	1.00	1.00	Productivity	26,580	128,000	128,000	110,000
H - Backfill with Treated Soil	A	3	5	1.72	/BCY	31,000	1.00	1.00	Productivity	53,120	73,000	73,000	63,000
H - Soil Cover for Solidified Materials	A	3	5	9.14	/SY	43,000	1.00	1.00	Productivity	393,020	448,000	448,000	388,000
H - Revetement of Disturbed Areas	A	3	5	0.18	/SY	43,000	1.00	1.00	Disturbance	7,722	10,000	10,000	8,000
B - Soil Excavation	LS	3	--	3.91	/BCY	130	1.00	1.00	Productivity	508	1,000	1,000	1,000
B - On-Post Hazardous Waste Land	LS	3	--	1.07	/BCY-MILE	130	1.00	1.00	Productivity	139	200	200	200
B - Transportation of Contaminated Soil to On-Post Hazardous Waste Land	LS	3	--	4.07	/BCY	130	1.00	1.00	Productivity	529	1,000	1,000	1,000
B - Excavation of Borrow Material	LS	3	--	1.89	/BCY	130	1.00	1.00	Productivity	245	300	300	300
B - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	130	1.00	1.00	Productivity	112	200	200	200
B - Backfill with Borrow Material	LS	3	--	1.72	/BCY	130	1.00	1.00	Productivity	223	300	300	300
B - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	80	1.00	1.00	Productivity	259	300	300	300
B - Revetement of Disturbed Areas	LS	3	--	0.18	/SY	80	1.00	1.00	Disturbance	14	20	20	20
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	7,100	1.00	1.00	Productivity	34,713	40,000	40,000	36,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	12	1.00	1.00	Productivity	54	100	100	100
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	12	1.00	1.00	Productivity	12	2	2	2
A - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	1	1.00	1.00	Productivity	1	1	1	1
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	1.00	1.00	Productivity	1	1	1	1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	4.07	/BCY	12	1.00	1.00	Productivity	48	5	5	4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	12	1.00	1.00	Productivity	15	20	20	20
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY-MILE	12	1.00	1.00	Productivity	20	40	40	40
A - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	170,000	1.00	1.00	Productivity	142,800	165,000	165,000	157,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	550	1.00	1.00	Productivity	38,813	44,000	44,000	40,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	57,000	1.00	1.00	Productivity	222,621	331,000	331,000	300,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Land	LS	3	--	0.71	/BCY-MILE	57,000	1.00	2.50	Productivity	40,050	150,000	150,000	136,000
U - On-Post Solid Waste Landfill	LS	3	--	4.07	/BCY	57,000	1.00	1.00	Productivity	231,990	285,000	285,000	240,000
U - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	110,000	1.00	1.00	Productivity	356,400	407,000	407,000	369,000
U - Revetement of Disturbed Areas	LS	3	--	0.18	/SY	110,000	1.00	1.00	Disturbance	19,800	25,000	25,000	23,000
Subtotal (f)											2,484,000	2,232,000	
INDIRECT O&M COSTS (OPERATIONS)													
Mob/Demob				5.1%							126,000	114,000	
Indirects, Overhead & Profit				40.3%							1,055,000	944,000	
Engineering Design				1.5%							55,000	49,000	
Resident Engineering				2.0%							74,000	66,000	
Contingency				31.3%							1,188,000	1,064,000	
Subtotal (O = J+K+L+M+N)											2,501,000	2,238,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
H - Cement-Based Solidification	A	3	5	70.10	/BCY	31,000	1.00	1.00	Productivity	2,163,100	2,480,000	2,144,000	
A - Incineration	LS	3	--	96.24	/BCY	12	1.00	1.00	Productivity	1,155	1,000	1,000	
U - Packaging and Transportation of HE Filled Used to Army Off-Post Fac.	LS	3	--	59.50	/BCY	550	1.00	1.00	Productivity	32,725	37,000	34,000	
Subtotal (f)											2,519,000	2,179,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)													
Mob/Demob				0.0%							0	0	
Contractor Markup				10.0%							252,000	218,000	
Engineering Design				0.0%							0	0	
Resident Engineering				2.0%							55,000	48,000	
Contingency				40.0%							1,130,000	978,000	
Subtotal (O1 = J1+K1+L1+M1+N1)											1,438,000	1,244,000	
TOTAL O&M COSTS (OPERATIONS) (OO = f+O1+O2)											8,951,000	7,893,000	

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Table B4.23-10 Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
H - Long Term Monitoring of Solidified Soil	A	5	30	0.25	/SY-YR	43,000	SY	1,000	1,000	1,000	12,000	318,000	152,000
H - Site Reviews	A	5	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	6,000	160,000	77,000
B - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	130	BCY	1,000	1,000	1,000	20	1,000	300
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000	0	4	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	57,000	BCY	1,000	1,000	1,000	8,000	237,000	120,000
Subtotal (P)													
											27,000	718,000	349,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
											COST CODE: LLSL		
											Indirects, Overhead & Profit 38.0%		
											Contingency 30.0%		
											10,000	278,000	136,000
											11,000	289,000	146,000
											22,000	578,000	282,000
											49,000	1,295,000	631,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													
											11,400,000	9,630,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													

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Table B5.M1-U4a RESIZED ALTERNATIVE - Cost Estimate - Munitions Testing Medium Group
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
U - On-Post Solid Waste Landfill	LS	1	--	7.08	/BCY	90,000	BCY	1.000	1.000	1.000			727,000	727,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	2	--	4.72	/BCY	90,000	BCY	1.000	1.000	1.000			485,000	485,000
Subtotal (A)													1,212,000	1,189,000
INDIRECT CAPITAL COSTS														
Mob/Demob	3.3%	COST CODE: LLSS												
Indirects, Overhead & Profit	36.0%	B = 0.033 * (A)												
Engineering Design	3.0%	C = 0.390 * (A+B)												
Resident Engineering	1.3%	D = 0.030 * (A+B+C)												
Contingency	28.3%	E = 0.013 * (A+B+C)												
		F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,077,000	1,057,000
DIRECT SUBCONTRACT CAPITAL COSTS														
Subtotal (A1)														
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob	0.0%	COST CODE: E												
Contractor Markup	0.0%	B1 = 0.000 * (A1)												
Engineering Design	0.0%	C1 = 0.000 * (A1+B1)												
Resident Engineering	0.0%	D1 = 0.000 * (A1+B1+C1)												
Contingency	30.0%	E1 = 0.000 * (A1+B1+C1)												
		F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													0	0
TOTAL CAPITAL COSTS (H1 = A1+G1+G11)													2,289,000	2,246,000
M: U4 W01														
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Table B5.M1-U4a **RESIZED ALTERNATIVE - Cost Estimate - Munitions Testing Medium Group**
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	270,000	SY	1.000	1.000	1.000		282,000	249,000	
U - Removal of Soil with UXO	LS	2	--	70.57	/BCY	450	BCY	1.000	1.000	1.000		36,000	36,000	36,000
U - Excavation of Debris from Surface Soil	LS	2	--	3.91	/BCY	90,000	BCY	1.000	1.000	1.300	Productivity	522,000	522,000	497,000
U - Transportation of Nonhaz. Waste Landfill	LS	2	--	0.71	/BCY-MILE	90,000	BCY	1.000	3.000	1.300	Productivity	284,000	284,000	271,000
U - On-Post Solid Waste Landfill	LS	2	--	3.93	/BCY	90,000	BCY	1.000	1.000	1.000		404,000	404,000	384,000
U - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	270,000	SY	1.000	1.000	1.000		998,000	998,000	951,000
U - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	270,000	SY	1.000	1.000	1.100	Disturbance	61,000	61,000	58,000
Subtotal (I)												2,598,000	2,445,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (O = J+K+L+M+N)												2,380,000	2,278,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
U - Packaging and Transportation of IIE Filled UXO to Army Off-Post Facility	LS	2	--	59.50	/BCY	450	BCY	1.000	1.000	1.000		31,000	31,000	28,000
Subtotal (I)												31,000	29,000	
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)														
Mod/Demob														
Contractor Markup														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (O1 = J1+K1+L1+M1+N1)												9,000	9,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												9,000	9,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+J1+O1)												4,997,000	4,759,000	

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Table B5.M1-U4a RESIZED ALTERNATIVE - Cost Estimate - Munitions Testing Medium Group
Alternative U4a: Detonation (Off-Post Army Facility)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	2	30	0.13	/BCY-YR	90,000	BCY	1.000	1.000	1.000		13,000	387,000	202,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												5,000	151,000	79,000
Contingency												6,000	161,000	84,000
Subtotal (S = Q+P)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
Subtotal (U)														
TOTAL COSTS														
Subtotal (U)														

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Table B5.A1-A4 RESIZED ALTERNATIVE - Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cred Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Isolated Excesses and Particulates)	LS	2	--	7.08	/BCY	610	BCY	1,000	1,000	1,000	1,000	5,000	5,000	5,000
A - On-Post Hazardous Waste Landfill Closure	LS	3	--	4.72	/BCY	610	BCY	1,000	1,000	1,000	1,000	3,000	3,000	3,000
Subtotal (A)														
													8,000	8,000
INDIRECT CAPITAL COSTS														
COST CODE: LUSS														
Mob/Demob													300	200
Indirects, Overhead & Profit													3,000	3,000
Engineering Design													400	300
Resident Engineering													100	100
Contingency													3,000	3,000
Subtotal (G = B+C+D+E+F)													7,000	7,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	72.34	/BCY	63	BCY	1,000	1,000	1,000	1,000	5,000	5,000	5,000
Subtotal (A1)													5,000	5,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob													100	100
Contractor Markup													1,000	1,000
Engineering Design													1,000	1,000
Resident Engineering													200	200
Contingency													2,000	2,000
Subtotal (G1 = B1+C1+D1+E1+F1)													3,000	3,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													24,000	24,000

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Table B5.A1-A4 RESIZED ALTERNATIVE - Cost Estimate - Agent Storage Medium Group - North Plants Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/BCY	28,000	BCY	1.000	1.000	1.000	1.000	156,000	148,000		
A - Excavation of Soil with Agent and Isolated Exceedances	LS	3	--	4.55	/BCY	670	BCY	1.000	1.000	1.000	1.000	3,000	3,000		
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	63	BCY	1.000	2.000	1.000	1.000	200	200		
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	610	BCY	1.000	1.000	1.000	1.000	1,000	1,000		
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	610	BCY	1.000	1.000	1.000	1.000	1,000	1,000		
A - On-Post Hazardous Waste Landfill (Isolated Exceedances and Particulates)	LS	3	--	3.93	/BCY	510	BCY	1.000	1.000	1.000	1.000	3,000	2,000		
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	610	BCY	1.000	1.000	1.000	1.000	1,000	1,000		
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	63	BCY	1.000	2.000	1.000	1.000	100	100		
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	63	BCY	1.000	1.000	1.000	1.000	100	100		
A - Excavation of Borrow Material	LS	3	--	1.89	/BCY	610	BCY	1.000	1.000	1.000	1.000	1,000	1,000		
A - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	610	BCY	1.000	1.500	1.000	1.000	1,000	1,000		
A - Backfill with Borrow Material	LS	3	--	1.72	/BCY	610	BCY	1.000	1.000	1.000	1.000	1,000	1,000		
A - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	1,960	SY	1.000	1.000	1.000	1.000	7,000	7,000		
A - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	1,960	SY	1.000	1.000	1.100	Disturbance	400	400		
Subtotal (f)												177,000	167,000		
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob				4.5%	J = 0.045 * (f)							8,000	8,000		
Indirects, Overhead & Profit				41.5%	K = 0.415 * (f+J)							77,000	73,000		
Engineering Design				0.5%	L = 0.005 * (f+J+K)							1,000	1,000		
Resident Engineering				1.8%	M = 0.018 * (f+J+K)							5,000	4,000		
Contingency				30.0%	N = 0.300 * (f+J+K+L+M)							80,000	76,000		
Subtotal (G) = J+K+L+M+N												171,000	162,000		
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
A - Incineration	LS	3	--	201.09	/BCY	63	BCY	1.000	1.000	1.000	1.000	14,000	13,000		
Subtotal (H)												14,000	13,000		
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mod/Demob				0.0%	J1 = 0.000 * (H)							0	0		
Contractor Markup				10.0%	K1 = 0.100 * (H+J1)							1,000	1,000		
Engineering Design				0.0%	L1 = 0.000 * (H+J1+K1)							0	0		
Resident Engineering				2.0%	M1 = 0.020 * (H+J1+K1)							300	300		
Contingency				40.0%	N1 = 0.400 * (H+J1+K1+L1+M1)							6,000	6,000		
Subtotal (O1) = J1+K1+L1+M1+N1												8,000	7,000		
TOTAL O&M COSTS (OPERATIONS) (OO = f+G+H+O1)												370,000	350,000		

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	610	BCY	1.000	1.000	1.000		100	3,000	1,000	1,000
Subtotal (P)												100	3,000	1,000	1,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit												40	1,000	1,000	1,000
Contingency												40	1,000	1,000	1,000
Subtotal (S = O+P)												100	2,000	1,000	1,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												200	5,000	2,000	2,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)													399,000		375,000

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Table B5.A2-A4 RESIZED ALTERNATIVE - Cost Estimate - Agent Storage Medium Group - Tonic Storage Yards Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Kiln)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
A - On-Post Hazardous Waste Landfill (Isolated Exceedances and Particulates)	LS	2	--	7.08	/BCY	270	BCY	1.000	1.000	1.000		2,000	2,000	2,000
A - On-Post Hazardous Waste Landfill Closure (Isolated Exceedances and Particulates)	LS	3	--	4.72	/BCY	220	BCY	1.000	1.000	1.000		1,000	1,000	1,000
Subtotal (A)												3,000	3,000	3,000
INDIRECT CAPITAL COSTS														
COST CODE: LISS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	28.3%	F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												3,000	3,000	2,000
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	72.34	/BCY	450	BCY	1.000	1.000	1.000		37,000	37,000	36,000
Subtotal (A1)												37,000	37,000	36,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												24,000	24,000	23,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												88,000	88,000	84,000

ATSY-A1.W01
SOILS DAA

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Table B5.A2-A4 RESIZED ALTERNATIVE - Cost Estimate - Agent Storage Medium Group - Toxic Storage Yards Subgroup
Alternative A4: Incineration/Pyrolysis (Rotary Klin)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	270,000	SY	1.000	1.000	1.000		1,507,000	1,507,000	1,436,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	660	BCY	1.000	1.000	1.000		3,000	3,000	3,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	450	BCY	1.000	2.500	1.000		1,000	1,000	1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	450	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	220	BCY	1.000	1.000	1.000		300	300	200
A - On-Post Hazardous Waste Landfill (Isolated Excesses and Particulates)	LS	3	--	3.93	/BCY	220	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	220	BCY	1.000	1.000	1.000		300	300	300
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	450	BCY	1.000	2.500	1.000		1,000	1,000	1,000
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	450	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - Excavation of Borrow Material	LS	3	--	1.89	/BCY	220	BCY	1.000	1.000	1.000		500	500	400
A - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	220	BCY	1.000	1.500	1.000		300	300	300
A - Backfill with Borrow Material	LS	3	--	1.72	/BCY	220	BCY	1.000	1.000	1.000		400	400	400
A - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	520	SY	1.000	1.000	1.000		2,000	2,000	2,000
A - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	520	SY	1.000	1.000	1.100	Disturbance	100	100	100
Subtotal (I)												1,519,000	1,446,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mobil/Demob				4.5%	J = 0.045 * (I)								68,000	65,000
Indirects, Overhead & Profit				41.5%	K = 0.415 * (I+J)								658,000	627,000
Engineering Design				0.5%	L = 0.005 * (I+J+K)								11,000	11,000
Resident Engineering				1.8%	M = 0.018 * (I+J+K)								36,000	37,000
Contingency				30.0%	N = 0.300 * (I+J+K+L+M)								688,000	656,000
Subtotal (O = J+K+L+M+N)												1,467,000	1,396,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	201.09	/BCY	450	BCY	1.000	1.000	1.000		103,000	103,000	94,000
Subtotal (I1)												103,000	84,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mobil/Demob				0.0%	J1 = 0.000 * (I1)								0	0
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)								10,000	8,000
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)								0	0
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)								2,000	2,000
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)								46,000	42,000
Subtotal (O1 = J1+K1+L1+M1+N1)												58,000	53,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												3,148,000	2,990,000	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
A - On Post Hazardous Waste Landfill Closure (Isolated Excesses and Particul	A	3	30	0.13	/BCY-YR	220	BCY	1.000	1.000	1.000		30	1,000	500
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 30.0% Q = 0.390 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													3,220,000	3,060,000

[illegible]

Table B5.B1-B1a RESIZED ALTERNATIVE - Cost Estimate - Lake Sediments Medium Group
Alternative B1a: Caps/Covers (Clay/Soil Cap) with Consolidation; No Additional Action (Provisions of FFA)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
B - Grubbing & Clearing	LS	1	--	0.17	/SY	40,000	SY	1.000	1.000	1.000			6,800	6,800		6,000
B - Temporary Cutoff Wall	LS	1	--	44.00	/LF	2,500	LF	1.000	1.000	1.000			108,000	108,000		126,000
B - Soil Excavation	LS	1	--	3.91	/BCY	51,000	BCY	1.000	1.000	1.000			228,000	228,000		228,000
B - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	51,000	BCY	1.000	1.500	1.000			93,000	93,000		93,000
B - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	51,000	BCY	1.000	1.000	1.000			211,000	211,000		211,000
B - Backfill of Topsoil With Humic	LS	1	--	19.44	/BCY	51,000	BCY	1.000	1.000	1.000			1,131,000	1,131,000		1,131,000
B - Wetlands Restoration	LS	1	--	1.55	/SY	40,000	SY	1.000	1.000	1.000			71,000	71,000		71,000
Subtotal (I)																
INDIRECT O&M COSTS (OPERATIONS)																
Mod/Demob				3.3%												
Indirects, Overhead & Profit				37.6%												
Engineering Design				0.5%												
Resident Engineering				1.8%												
Contingency				30.0%												
Subtotal (O = J+K+L+M+N)																
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
B - Long Term Soil Monitoring, Lake Sediments	A	1	30	62,000.00	/EA-YR	1	EA	1.000	1.000	1.000			71,000	71,000		1,125,000
B - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000			6,000	6,000		96,000
Subtotal (P)																
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Indirects, Overhead & Profit				38.0%												
Contingency				30.0%												
Subtotal (S)																
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]																
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)																
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Table B5.B2-B9
RESIZED ALTERNATIVE - Cost Estimate - Surficial Soils Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

[illegible]

Table B5.B2-B9 RESIZED ALTERNATIVE - Cost Estimate - Surficial Soils Medium Group
Alternative B9: In Situ Biological Treatment (Landfarm/Agricultural Practice)

Cost Item	Cost Type	Start Year	End Year	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)													
B - Agricultural Practices	A	1	4	0.20	5,500,000	SY	1.000	1.000	1.000		1,255,000	1,255,000	1,168,000
INDIRECT O&M COSTS (OPERATIONS)													
Subtotal (I)												1,255,000	1,168,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
B - Long Term Soil Monitoring, Surficial Soils	A	4	30	19,000.00	1	EA	1.000	1.000	1.000		22,000	585,000	288,000
B - Site Reviews	A	4	30	5,400.00	1	EA	1.000	1.000	1.000		6,000	166,000	82,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)													
Subtotal (P)												752,000	370,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]													
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													

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Table B5.B3-B5a RESIZED ALTERNATIVE - Cost Estimate - Ditches/Drainage Areas Medium Group
Alternative B5a: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS																	
INDIRECT CAPITAL COSTS																	
Subtotal (A)																	
COST CODE LLSS																	
Mob/Demob																	
3.3% B = 0.033 * (A)																	
Indirects, Overhead & Profit																	
38.0% C = 0.380 * (A+B)																	
Engineering Design																	
3.0% D = 0.030 * (A+B+C)																	
Resident Engineering																	
1.3% E = 0.013 * (A+B+C)																	
Contingency																	
26.3% F = 0.263 * (A+B+C+D+E)																	
Subtotal (G =B+C+D+E+F)																	
TOTAL CAPITAL COSTS (H = A+G)																	
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Table B5.B3-B5a **RESIZED ALTERNATIVE - Cost Estimate - Ditches/Drainage Areas Medium Group**
Alternative B5a: Caps/Covers (Clay/Soil Cap) with Consolidation

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SOILS DAA

Table B5.1-6f RESIZED ALTERNATIVE - Cost Estimate - Basin A Medium Group
Alternative 6f: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	46	BCY	1.000	1.000	1.000			400	400
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	46	BCY	1.000	1.000	1.000			200	200
Subtotal (A)													1,000	1,000
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													1,000	1,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	34.85	/BCY	4,600	BCY	1.000	1.000	1.000			183,000	179,000
Subtotal (A1)													183,000	179,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													116,000	113,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													300,000	283,000
HBA-06F-W01 SOILS DAA														
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Table B5.1-6f RESIZED ALTERNATIVE - Cost Estimate - Basin A Medium Group
Alternative 6f: Direct Thermal Description (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																	
H - Soil Excavation	LS	3	--		3.91	/BCY	4,600	BCY	1.000	1.000	1.200	Other Control			25,000		22,000
H - Transportation of Contaminated Soil to Thermal Description Facility	LS	3	--		1.07	/BCY-MILE	4,600	BCY	1.000	1.250	1.000				7,000		6,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--		1.55	/BCY	46	BCY	1.000	1.000	1.000				100		100
H - Transportation of Particulates to On-Pad Hazardous Waste Landfill	LS	3	--		1.07	/BCY-MILE	46	BCY	1.000	1.000	1.000				100		100
H - On-Pad Hazardous Waste Landfill (Particulates)	LS	3	--		3.93	/BCY	46	BCY	1.000	1.000	1.000				200		200
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--		1.28	/BCY	4,600	BCY	1.000	1.000	1.000				7,000		6,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--		0.86	/BCY-MILE	4,600	BCY	1.000	1.250	1.000				6,000		5,000
H - Backfill with Treated Soil	LS	3	--		1.72	/BCY	4,600	BCY	1.000	1.000	1.000				8,000		8,000
HBAU - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--		0.06	/SY	560,000	SY	1.000	1.000	1.000				36,000		37,000
HBAU - Installation of Clay/Soil Cap	A	3	4		23.30	/SY	560,000	SY	1.000	1.000	1.000				14,860,000		13,184,000
HBAU - Revegetation of Disturbed Areas	A	3	4		0.18	/SY	560,000	SY	1.000	1.000	1.000	Disturbance			127,000		112,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--		4.89	/SY	17,000	SY	1.000	1.000	1.000				96,000		80,000
U - UXO Clearance In Surface Soil by Geophysics	LS	2	--		0.24	/SY	130,000	SY	1.000	1.000	1.000				36,000		34,000
Subtotal (I)														15,238,000		13,505,000	
INDIRECT O&M COSTS (OPERATIONS)																	
Mob/Demob				3.9%	COST CODE: MLLS												
Indirects, Overhead & Profit				37.8%	J = 0.038 * (I)												
Engineering Design				0.5%	K = 0.378 * (I+J)												
Resident Engineering				1.5%	L = 0.005 * (I+J+K)												
Contingency				27.5%	M = 0.015 * (I+J+K)												
					N = 0.275 * (I+J+K+L+M)												
Subtotal (O) = J+K+L+M+N														590,000		523,000	
Subtotal (O) = J+K+L+M+N														5,976,000		5,298,000	
Subtotal (O) = J+K+L+M+N														108,000		97,000	
Subtotal (O) = J+K+L+M+N														327,000		290,000	
Subtotal (O) = J+K+L+M+N														6,116,000		5,420,000	
Subtotal (O) = J+K+L+M+N														13,118,000		11,638,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
H - Thermal Description (Saturated Soil)	LS	3	--		93.33	/BCY	4,600	BCY	1.000	1.000	1.000				480,000		444,000
Subtotal (I1)														480,000		444,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
Mob/Demob				0.0%	COST CODE: D												
Contractor Markup				10.0%	J1 = 0.000 * (I1)												
Engineering Design				0.0%	K1 = 0.100 * (I1+J1)												
Resident Engineering				2.0%	L1 = 0.000 * (I1+J1+K1)												
Contingency				40.0%	M1 = 0.020 * (I1+J1+K1)												
					N1 = 0.400 * (I1+J1+K1+L1+M1)												
Subtotal (O1) = J1+K1+L1+M1+N1														0		0	
Subtotal (O1) = J1+K1+L1+M1+N1														48,000		44,000	
Subtotal (O1) = J1+K1+L1+M1+N1														0		0	
Subtotal (O1) = J1+K1+L1+M1+N1														11,000		10,000	
Subtotal (O1) = J1+K1+L1+M1+N1														220,000		199,000	
Subtotal (O1) = J1+K1+L1+M1+N1														280,000		254,000	
Subtotal (O1) = J1+K1+L1+M1+N1														29,127,000		25,829,000	

Table B5.1-6f

Alternative 6f: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	PW Cost			
				Unit Cost								Annual Cost	Total Cost				
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	46	BCY	1,000	1,000	1,000		10	200	100			
HBAU - Installation of Clay/Soil Cap	A	3	30	0.80	/SY-YR	560,000	SY	1,000	1,000	1,000		511,000	14,315,000	7,254,000			
HBAU - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	173,000	87,000			
Subtotal (P)												517,000	14,488,000	7,341,000			
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																	
Indirects, Overhead & Profit	COST CODE: ULSL																
Contingency	Q = 0.390 * (P)																
	R = 0.300 * (P+Q)																
Subtotal (S = Q+R)												202,000	5,650,000	2,863,000			
															216,000	6,041,000	3,061,000
Subtotal (S = Q+R)												418,000	11,691,000	5,925,000			
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												935,000	26,179,000	13,266,000			
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)																	
													55,600,000	39,400,000			

HBA-06F.WQ1
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Table B5.2-6e RESIZED ALTERNATIVE - Cost Estimate - Basin F Wastepile Medium Group
Alternative 6e: Caps/Covers (Composite Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	75,000	SY	1.000	1.000	1.000			5,000	5,000
H - Installation of Composite Cap	LS	1	--	36.04	/SY	75,000	SY	1.000	1.000	1.000			3,095,000	3,095,000
H - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	75,000	SY	1.000	1.000	1.100	Disturbance		17,000	17,000
H - Modification to Existing Sump	LS	1	--	9,410.00	/EA	1	EA	1.000	1.000	1.000			11,000	11,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob													3,117,000	3,117,000
Indirects, Overhead & Profit													101,000	101,000
Engineering Design													1,215,000	1,215,000
Resident Engineering													22,000	22,000
Contingency													55,000	55,000
													1,184,000	1,184,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Installation of Composite Cap	A	1	30	1.23	/SY-YR	75,000	SY	1.000	1.000	1.000		105,000	3,158,000	1,674,000
H - Treatment and Disposal of Wastepile Leachate	A	1	30	18.00	/GAL	550	GAL/YR	1.000	1.000	1.000		11,000	339,000	180,000
H - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													48,000	1,438,000
Contingency													51,000	1,535,000
													99,000	2,971,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												222,000	12,349,000	9,222,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = I+T)														
													12,300,000	9,220,000

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RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
Subtotal (A)														
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mod/Demob													0	0
Indirects, Overhead & Profit													0	0
Engineering Design													0	0
Resident Engineering													0	0
Contingency													0	0
Subtotal (G = B+C+D+E+F)														
Subtotal (G = B+C+D+E+F)														
TOTAL CAPITAL COSTS (H = A+G)														
Subtotal (H = A+G)														
Subtotal (H = A+G)														

Table B5.3-6g RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins Medium Group - Secondary Basins Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	A	1	2	3.91	/BCY	300,000	BCY	1,000	1,000	1,000		1,339,000		1,307,000
HB - Transportation of Contaminated Soil to Consolidation Area	A	1	2	1.07	/BCY-MILE	300,000	BCY	1,000	1,500	1,000		549,000		536,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	A	1	2	3.63	/BCY	300,000	BCY	1,000	1,000	1,000		1,243,000		1,213,000
HB - Excavation of Borrow Material	A	1	2	1.89	/BCY	300,000	BCY	1,000	1,000	1,000		647,000		632,000
HB - Transportation of Borrow Material to Backfill Area	A	1	2	0.86	/BCY-MILE	300,000	BCY	1,000	1,500	1,000		442,000		431,000
HB - Backfill with Borrow Material	A	1	2	1.72	/BCY	300,000	BCY	1,000	1,000	1,000		589,000		575,000
HB - Installation of 6 Inches of Topsoil	A	1	2	3.24	/SY	430,000	SY	1,000	1,000	1,000		1,590,000		1,552,000
HB - Revegetation of Disturbed Areas	A	1	2	0.18	/SY	430,000	SY	1,000	1,000	1,000	Disturbance	97,000		95,000
INDIRECT O&M COSTS (OPERATIONS)														
Subtotal (I)													6,495,000	6,341,000
Cost Code														
J = 0.008 * (I)														
K = 0.390 * (I+J)														
L = 0.005 * (I+J+K)														
M = 0.015 * (I+J+K+L)														
N = 0.275 * (I+J+K+L+M)														
Subtotal (O = J+K+L+M+N)														
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	2	30	0.00	/SY	430,000	SY	1,000	1,000	1,000		0	0	0
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (P)													0	0
Cost Code														
Q = 0.390 * (P)													0	0
R = 0.300 * (P+Q)													0	0
Subtotal (S)													0	0
TOTAL O&M COSTS (T = I+O+P+S)														
Subtotal													0	0
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal													12,197,000	11,906,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
Subtotal													12,200,000	11,900,000

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Table BS.4-6c RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6c: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	2,200	BCY	1,000	1,000	1,000		18,000	18,000	17,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	2	--	4.72	/BCY	2,200	BCY	1,000	1,000	1,000		12,000	12,000	11,000
Subtotal (A)													30,000	28,000
INDIRECT CAPITAL COSTS														
COST CODE: LLSS														
Mob/Demob	3.3%	B = 0.033 * (A)												
Indirects, Overhead & Profit	38.0%	C = 0.380 * (A+B)												
Engineering Design	3.0%	D = 0.030 * (A+B+C)												
Resident Engineering	1.3%	E = 0.013 * (A+B+C)												
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)													26,000	25,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Dry Soil)	A	1	2	34.85	/BCY	220,000	BCY	1,000	1,000	1,000		8,749,000	8,749,000	8,541,000
Subtotal (A1)													8,749,000	8,541,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)													5,544,000	5,412,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													14,349,000	14,006,000
HFBF-06C-WQ1 SOILS DAA 16-Jul-93														

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation of Cover Overburden	LS	3	--	1.89	/BCY	110,000	BCY	1.000	1.000	1.000			237,000	215,000
H - Soil Excavation	LS	3	--	3.91	/BCY	220,000	BCY	1.000	1.000	1.200			1,178,000	1,098,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	220,000	BCY	1.000	2.000	1.000			537,000	487,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	2,200	BCY	1.000	1.000	1.000			4,000	4,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	2,200	BCY	1.000	1.000	1.000			3,000	2,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	2,200	BCY	1.000	1.000	1.000			10,000	8,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	220,000	BCY	1.000	1.000	1.000			321,000	281,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	220,000	BCY	1.000	2.000	1.000			432,000	392,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	220,000	BCY	1.000	1.000	1.000			432,000	392,000
H - Backfill of Cover Overburden	LS	3	--	1.72	/BCY	110,000	BCY	1.000	1.000	1.000			216,000	196,000
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06	/SY	420,000	SY	1.000	1.000	1.000			29,000	27,000
HB - Modification of Existing Soil Cover	LS	3	--	22.80	/SY	420,000	SY	1.000	1.000	1.000			10,928,000	9,912,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	420,000	SY	1.000	1.000	1.100			95,000	86,000
Subtotal (f)												14,421,000	13,082,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	COST CODE: MILS													
Indirects, Overhead & Profit	3.9%	J = 0.039 * (f)												
Engineering Design	0.5%	K = 0.378 * (f+J)												
Resident Engineering	1.5%	L = 0.005 * (f+J+K)												
Contingency	27.5%	M = 0.015 * (f+J+K)												
		N = 0.275 * (f+J+K+L+M)												
Subtotal (O = J+K+L+M+N)												559,000	507,000	
												5,655,000	5,130,000	
												103,000	94,000	
												310,000	281,000	
												5,798,000	5,251,000	
Subtotal (I)												12,415,000	11,282,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	93.33	/BCY	220,000	BCY	1.000	1.000	1.000			23,431,000	21,253,000
Subtotal (I)												23,431,000	21,253,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	COST CODE: D													
Contractor Markup	0.0%	J1 = 0.000 * (I1)												
Engineering Design	10.0%	K1 = 0.100 * (I1+J1)												
Resident Engineering	0.0%	L1 = 0.000 * (I1+J1+K1)												
Contingency	2.0%	M1 = 0.020 * (I1+J1+K1)												
	40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)												
Subtotal (O1 = J1+K1+L1+M1+N1)												0	0	
												2,343,000	2,125,000	
												0	0	
												515,000	468,000	
												10,516,000	9,538,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												13,374,000	12,131,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												63,642,000	57,727,000	
HFRF-O&C W/O														
SOILS DAA														

Table B5.4-6c RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins Medium Group - Former Basin F Subgroup
Alternative 6c: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Modifications to Existing System

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HI - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	BCY	2,200	BCY	1,000	1,000	1,000		300	9,000	5,000
HB - Modification of Existing Soil Cover	A	3	30	0.80	/SY-YR	SY	420,000	SY	1,000	1,000	1,000		363,000	10,736,000	5,440,000
HB - Site Reviews	A	3	30	5,400.00	/EA-YR	EA	1	EA	1,000	1,000	1,000		6,000	173,000	87,000
Subtotal (P)													369,000	10,918,000	5,532,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
COST CODE: LLSL															
Indirects, Overhead & Profit 39.0% $Q = 0.390 * (P)$															
Contingency 30.0% $R = 0.300 * (P+Q)$															
Subtotal (S = Q+R)													315,000	8,811,000	4,465,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)													705,000	19,728,000	9,997,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														97,700,000	81,700,000

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Table B5.5-6g
RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation
Basin F Exterior Subgroup

[illegible]

Table B5.5-6g RESIZED ALTERNATIVE - Cost Estimate - Secondary Basins Medium Group - Basin F Exterior Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																
H - Soil Excavation	LS	1	--	--	3.91	/BCY	80,000	BCY	1.000	1.000	1.000		357,000		357,000	
H - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	--	1.07	/BCY-MILE	80,000	BCY	1.000	2.000	1.000		195,000		195,000	
H - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	--	3.63	/BCY	80,000	BCY	1.000	1.000	1.000		331,000		331,000	
H - Excavation of Borrow Material	LS	1	--	--	1.89	/BCY	80,000	BCY	1.000	1.000	1.000		173,000		173,000	
H - Transportation of Borrow Material to Backfill Area	LS	1	--	--	0.86	/BCY-MILE	80,000	BCY	1.000	1.500	1.000		118,000		118,000	
H - Backfill with Borrow Material	LS	1	--	--	1.72	/BCY	80,000	BCY	1.000	1.000	1.000		157,000		157,000	
H - Installation of 6 Inches of Topsoil	LS	1	--	--	3.24	/SY	260,000	SY	1.000	1.000	1.000		961,000		961,000	
H - Revegetation of Disturbed Areas	LS	1	--	--	0.18	/SY	260,000	SY	1.000	1.000	1.100	Disturbance	59,000		59,000	
B - Agricultural Practices	A	1	2		0.20	/SY	2,000,000	SY	1.000	1.000	1.000		456,000		456,000	
													2,808,000		2,797,000	
INDIRECT O&M COSTS (OPERATIONS)																
Subtotal (I) COST CODE MUMS																
Mob/Demob					3.9%	J = 0.039 * (I)										
Indirects, Overhead & Profit					39.0%	K = 0.390 * (I+J)							109,000		109,000	
Engineering Design					0.5%	L = 0.005 * (I+J+K)							1,137,000		1,133,000	
Resident Engineering					1.5%	M = 0.015 * (I+J+K)							20,000		20,000	
Contingency					27.5%	N = 0.275 * (I+J+K+L+M)							61,000		61,000	
													1,137,000		1,133,000	
													2,464,000		2,455,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
H - No Action	A	1	30		0.00	/SY	260,000	SY	1.000	1.000	1.000		0		0	
B - Long Term Soil Monitoring, Basin F Exterior	A	3	30		7,000.00	/EA-YR	1	EA	1.000	1.000	1.000		8,000		224,000	
H - Site Reviews	A	3	30		5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000		173,000	
													14,000		396,000	
													6,000		155,000	
													6,000		165,000	
													11,000		320,000	
													28,000		5,998,000	
													5,990,000		5,610,000	
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]																
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)																

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	1995 (\$)	
				Unit Cost								Annual Cost	Total Cost	PW Cost		
DIRECT CAPITAL COSTS																
H - Public Education	LS	1	--	13,500.00	/EA	1	EA	1.000	1.000	1.000		15,000	15,000	15,000		
B - No Action	LS	1	--	0.00	/SY	19,000	SY	1.000	1.000	1.000		0	0	0		
Subtotal (A)													15,000	15,000		
INDIRECT CAPITAL COSTS																
Mod/Demob	3.3% B = 0.033 * (A)															
Indirects, Overhead & Profit	39.0% C = 0.390 * (A+B)															
Engineering Design	3.0% D = 0.030 * (A+B+C)															
Resident Engineering	1.3% E = 0.013 * (A+B+C)															
Contingency	26.3% F = 0.263 * (A+B+C+D+E)															
Subtotal (G = B+C+D+E+F)													14,000	14,000		
TOTAL CAPITAL COSTS (H + A/G)													29,000	29,000		

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Sewer Signs	LS	1	--	0.09	/LF	124,000	LF	1,000	1,000	2,000	Spacing		24,000	24,000
H - Plugging of Sewer Lines	LS	1	--	149.00	/CY	7,000	CY	1,000	1,000	1,000			1,190,000	1,190,000
H - Public Education	A	1	30	4,500.00	/EA-YR	1		1,000	1,000	1,000			154,000	82,000
B - No Action	LS	1	--	0.00	/SY	19,000	SY	1,000	1,000	1,000			0	0
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob													1,389,000	1,298,000
Indirects, Overhead & Profit													62,000	58,000
Engineering Design													576,000	545,000
Resident Engineering													30,000	28,000
Contingency													35,000	33,000
													595,000	564,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Sewer Signs	A	1	30	0.00	/LF	124,000	LF	1,000	1,000	2,000	Spacing	1,000	37,000	18,000
HB - Long Term Soil Monitoring, Sanitary Sewers	A	1	30	28,000.00	/EA-YR	1	EA	1,000	1,000	1,000		32,000	969,000	508,000
HB - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000		6,000	185,000	98,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit													39,000	32,000
Contingency													15,000	14,000
													16,000	15,000
													32,000	30,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
												71,000	4,759,000	3,655,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														
													4,830,000	3,680,000

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Table B5.7-3a

RESIZED ALTERNATIVE - Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 3a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume: Landfill (On-Post Landfill)

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Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	470	BCY	1.000	1.000	1.000			4,000	4,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	470	BCY	1.000	1.000	1.000			3,000	2,000
H - On-Post Hazardous Waste Landfill	LS	2	--	7.08	/BCY	35,000	BCY	1.000	1.000	1.000			283,000	288,000
H - On-Post Hazardous Waste Landfill Closure	LS	3	--	4.72	/BCY	35,000	BCY	1.000	1.000	1.000			186,000	171,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	6	BCY	1.000	1.000	1.000			50	50
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	6	BCY	1.000	1.000	1.000			30	30
Subtotal (A)														
													478,000	448,000
INDIRECT CAPITAL COSTS														
Mod/Demob	3.3%													
Indirects, Overhead & Profit	39.0%													
Engineering Design	3.0%													
Resident Engineering	1.3%													
Contingency	26.3%													
													16,000	15,000
													192,000	180,000
													21,000	19,000
													9,000	8,000
													186,000	175,000
													425,000	397,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	34.85	/BCY	47,000	BCY	1.000	1.000	1.000			1,669,000	1,825,000
A - Incineration	A	1	2	72.34	/BCY	640	BCY	1.000	1.000	1.000			53,000	52,000
													1,922,000	1,876,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mod/Demob	2.0%													
Contractor Markup	10.0%													
Engineering Design	9.0%													
Resident Engineering	3.0%													
Contingency	30.0%													
													36,000	36,000
													196,000	191,000
													194,000	189,000
													65,000	63,000
													725,000	707,000
													1,218,000	1,189,000
													4,042,000	3,908,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)														
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Table B5.7-3a RESIZED ALTERNATIVE - Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 3a: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	Unit Cost (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Excavation of Sewer Overburden	LS	3	--	1.51	/BCY	340,000	BCY	1.000	1.000	1.000	1.000	598,000	598,000	598,000	531,000
HA - Removal of Steel/Cast Iron Pipe	LS	3	--	20.68	/LF	15,100	LF	1.000	1.000	1.200	Odor Control	428,000	428,000	428,000	388,000
HA - Excavate Chemical Sewers	LS	3	--	7.25	/BCY	82,000	BCY	1.000	1.000	1.200	Odor Control	814,000	814,000	814,000	738,000
HA - Transportation of Chemical Sewers to Thermal Desorption Unit	LS	3	--	1.05	/BCY-MILE	47,000	BCY	1.010	0.500	1.000		28,000	28,000	28,000	26,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	470	BCY	1.010	1.000	1.000		1,000	1,000	1,000	1,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	470	BCY	1.000	1.000	1.000		1,000	1,000	1,000	1,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	470	BCY	1.000	1.000	1.000		2,000	2,000	2,000	2,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	47,000	BCY	1.010	1.000	1.000		69,000	69,000	69,000	63,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	47,000	BCY	1.010	0.500	1.000		23,000	23,000	23,000	21,000
H - Backfill of Treated Soil for Chemical Sewers	LS	3	--	1.56	/BCY	47,000	BCY	1.010	1.000	1.000		85,000	85,000	85,000	77,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	35,000	BCY	1.010	1.500	1.000		65,000	65,000	65,000	59,000
H - On-Post Hazardous Waste Landfill	LS	3	--	3.93	/BCY	35,000	BCY	1.010	1.000	1.000		159,000	159,000	159,000	144,000
H - Excavation of Borrow Material	LS	3	--	1.89	/BCY	35,000	BCY	1.000	1.000	1.000		75,000	75,000	75,000	68,000
H - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	35,000	BCY	1.000	1.500	1.000		52,000	52,000	52,000	47,000
H - Backfill with Borrow Material	LS	3	--	1.72	/BCY	35,000	BCY	1.000	1.000	1.000		69,000	69,000	69,000	62,000
H - Backfill of Sewer Overburden	LS	3	--	1.56	/BCY	340,000	BCY	1.000	1.000	1.000		605,000	605,000	605,000	548,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	100,000	SY	1.000	1.000	1.100	Disturbance	23,000	23,000	23,000	20,000
A - Agent Screening During Excavation	LS	3	--	0.10	/BCY	64,000	BCY	1.000	1.000	1.000		7,000	7,000	7,000	7,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	640	BCY	1.000	1.000	1.200	Odor Control	4,000	4,000	4,000	4,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	640	BCY	1.000	1.500	1.000		1,000	1,000	1,000	1,000
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	6	BCY	1.000	1.000	1.000		10	10	10	10
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	6	BCY	1.000	1.000	1.000		10	10	10	10
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	6	BCY	1.000	1.000	1.000		30	30	30	20
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000	1,000
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	640	BCY	1.000	1.500	1.000		1,000	1,000	1,000	1,000
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	640	BCY	1.000	1.000	1.000		1,000	1,000	1,000	1,000
Subtotal (f)												3,099,000	3,099,000	3,099,000	2,811,000
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob				4.5%	J = 0.045 * (f)							139,000	139,000	139,000	128,000
Indirects, Overhead & Profit				40.3%	K = 0.403 * (f+J)							1,304,000	1,304,000	1,304,000	1,182,000
Engineering Design				0.5%	L = 0.005 * (f+J+K)							23,000	23,000	23,000	21,000
Resident Engineering				1.8%	M = 0.018 * (f+J+K)							79,000	79,000	79,000	72,000
Contingency				30.0%	N = 0.300 * (f+J+K+L+M)							1,393,000	1,393,000	1,393,000	1,264,000
Subtotal (O = J+K+L+M+N)												2,939,000	2,939,000	2,939,000	2,685,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Thermal Desorption (Saturated Soil)	LS	3	--	93.33	/BCY	47,000	BCY	1.010	1.000	1.000		5,056,000	5,056,000	5,056,000	4,586,000
A - Incineration	LS	3	--	201.09	/BCY	640	BCY	1.000	1.000	1.000		147,000	147,000	147,000	133,000
Subtotal (f)												5,203,000	5,203,000	5,203,000	4,719,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mod/Demob				0.0%	J1 = 0.000 * (f1)							0	0	0	0
Contractor Markup				10.0%	K1 = 0.100 * (f1+J1)							520,000	520,000	520,000	472,000
Engineering Design				0.0%	L1 = 0.000 * (f1+J1+K1)							0	0	0	0
Resident Engineering				2.0%	M1 = 0.020 * (f1+J1+K1)							114,000	114,000	114,000	104,000
Contingency				40.0%	N1 = 0.400 * (f1+J1+K1+L1+M1)							2,335,000	2,335,000	2,335,000	2,116,000
Subtotal (O1 = J1+K1+L1+M1+N1)												2,970,000	2,970,000	2,970,000	2,694,000
TOTAL O&M COSTS (OPERATIONS) (OO = f+O+O1)															
												14,210,000	14,210,000	14,210,000	12,889,000

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Table B5.7-3a RESIZED ALTERNATIVE - Cost Estimate - Sewer Systems Medium Group - Chemical Sewers Subgroup
Alternative 3a: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	470	BCY	1.000	1.000	1.000		100	2,000	1,000
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	31,000	BCY	1.000	1.000	1.000		5,000	129,000	65,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	6	BCY	1.000	1.000	1.000		1	20	10
Subtotal (P)														
												5,000	131,000	66,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects: Overhead & Profit												2,000	51,000	28,000
Contingency												2,000	55,000	28,000
Subtotal (S = Q+R)														
												4,000	106,000	53,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												8,000	236,000	120,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													18,500,000	16,900,000

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RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Table B5.8-5b
Alternative 5b: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS															
H - Long-Term Dewatering, Complex Trenches	LS	2	--	280,740.00	/EA	EA	1.000	1.000	1.000			320,000	305,000		
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	BCY	1.000	1.000	1.000			100	100		
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	4	--	4.72	/BCY	BCY	1.000	1.000	1.000			40	30		
U - On-Post Solid Waste Landfill	LS	2	--	7.08	/BCY	BCY	1.000	1.000	1.000			735,000	700,000		
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	4	--	4.72	/BCY	BCY	1.000	1.000	1.000			480,000	423,000		
Subtotal (A)												1,546,000	1,429,000		
INDIRECT CAPITAL COSTS															
COST CODE: MWSS															
Mob/Demob	4.5%	B = 0.045 * (A)												64,000	64,000
Indirects	40.3%	C = 0.403 * (A+B)												650,000	601,000
Engineering Design	4.5%	D = 0.045 * (A+B+C)												102,000	94,000
Resident Engineering	1.8%	E = 0.018 * (A+B+C)												40,000	37,000
Contingency	28.8%	F = 0.288 * (A+B+C+D+E)												682,000	640,000
Subtotal (G = B+C+D+E+F)												1,553,000	1,436,000		
DIRECT SUBCONTRACT CAPITAL COSTS															
A - Incineration	A	1	2	72.34	/BCY	BCY	1.000	1.000	1.000			14,000	14,000		
Subtotal (A1)												14,000	14,000		
INDIRECT SUBCONTRACT CAPITAL COSTS															
COST CODE: C															
Mob/Demob	2.0%	B1 = 0.020 * (A1)												300	300
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												1,000	1,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												1,000	1,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												500	500
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												5,000	5,000
Subtotal (G1 = B1+C1+D1+E1+F1)												9,000	9,000		
TOTAL CAPITAL COSTS (A1 + A + G1 + G1)												3,122,000	2,987,000		

Table B5.8-5b RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 5b: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
H - Slurry Wall (20 - 65 ft Deep)	A	3	4	47.22	/SY	27,100	SY	1,000	1,000	1,000		1,460,000	1,283,000	
HB - Soil Excavation	A	3	4	3.91	/BCY	70,000	BCY	1,000	1,000	1,200		375,000	332,000	
HB - Grade Filling w/Consolidated Soil Prior to Capping	A	3	4	3.63	/BCY	70,000	BCY	1,000	1,000	1,000	Odor Control	280,000	257,000	
H - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06	/SY	130,000	SY	1,000	1,000	1,000		8,000	8,000	
H - Grade Filling w/Excav Soil from Slurry Trench Prior to Capping	A	3	4	3.63	/BCY	27,100	BCY	1,000	1,000	1,000		112,000	98,000	
HAU - Installation of Clay/Soil Cap	A	3	4	23.30	/SY	130,000	SY	1,000	1,000	1,000		3,457,000	3,081,000	
HB - Installation of 6 Inches of Topsoil	A	3	4	3.24	/SY	240,000	SY	1,000	1,000	1,000		887,000	786,000	
HB - Re-vegetation of Disturbed Areas	A	3	4	0.18	/SY	350,000	SY	1,000	1,000	1,100	Disturbance	79,000	70,000	
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	280,000	SY	1,000	1,000	1,000		1,562,000	1,417,000	
A - Excavation of Soil with Agent	A	3	4	4.55	/BCY	1,700	BCY	1,000	1,000	1,200	Odor Control	11,000	9,000	
A - Transportation of Contaminated Soil to On-Post Incineration Facility	A	3	4	1.07	/BCY-MILE	1,700	BCY	1,000	1,000	1,000		2,000	2,000	
A - Load Treated Soil for Transport to Hazardous Landfill	A	3	4	1.55	/BCY	7	BCY	1,000	1,000	1,000		10	10	
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	A	3	4	1.07	/BCY-MILE	7	BCY	1,000	1,000	1,000		10	10	
A - On-Post Hazardous Waste Landfill (Particulates)	A	3	4	3.93	/BCY	7	BCY	1,000	1,000	1,000		30	30	
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	4	1.28	/BCY	1,700	BCY	1,000	1,000	1,000		2,000	2,000	
A - Transportation of Treated Soil to Backfill Excavation	A	3	4	0.86	/BCY-MILE	1,700	BCY	1,000	1,000	1,000		2,000	1,000	
A - Backfill with Treated Soil	A	3	4	1.72	/BCY	1,700	BCY	1,000	1,000	1,000		3,000	3,000	
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	280,000	SY	1,000	1,000	1,000		272,000	259,000	
U - Removal of Soil with UXO	A	3	4	70.57	/BCY	1,700	BCY	1,000	1,000	1,000		137,000	121,000	
U - Excavation of Debris from Surface Soil	A	3	4	3.91	/BCY	17,000	BCY	1,000	1,000	1,300	Productivity	98,000	87,000	
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	A	3	4	0.71	/BCY-MILE	17,000	BCY	1,000	0.750	1,300	Productivity	13,000	12,000	
U - On-Post Solid Waste Landfill	A	3	4	3.93	/BCY	17,000	BCY	1,000	1,000	1,000		76,000	68,000	
Subtotal (I)												8,849,000	7,888,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	5.1%				J = 0.051 * (I)									
Indirects, Overhead & Profit	40.3%				K = 0.403 * (I+J)									
Engineering Design	1.5%				L = 0.015 * (I+J+K)									
Resident Engineering	2.0%				M = 0.020 * (I+J+K)									
Contingency	31.3%				N = 0.313 * (I+J+K+L+M)									
Subtotal (O = J+K+L+M+N)												8,874,000	7,910,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	A	3	4	201.09	/BCY	1,700	BCY	1,000	1,000	1,000		360,000	345,000	
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	A	3	4	2,200.00	/BCY	1,700	BCY	1,000	1,000	1,000		4,288,000	3,779,000	
Subtotal (I1)												4,658,000	4,124,000	
INDIRECT SUBCONTR. O&M COSTS (OPERATIONS)														
Mod/Demob	0.0%				J1 = 0.000 * (I1)									
Contractor Markup	10.0%				K1 = 0.100 * (I1+J1)									
Engineering Design	0.0%				L1 = 0.000 * (I1+J1+K1)									
Resident Engineering	2.0%				M1 = 0.020 * (I1+J1+K1)									
Contingency	40.0%				N1 = 0.400 * (I1+J1+K1+L1+M1)									
Subtotal (O1 = J1+K1+L1+M1+N1)												0	0	
												468,000	412,000	
												0	0	
												102,000	91,000	
												2,091,000	1,851,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												2,659,000	2,354,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												25,040,000	22,276,000	

HCT-03R.W01
SOILS DAA

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Table B5.8-5b RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Complex Trenches Subgroup
Alternative 5b: Caps/Covers (Clay/Soil Cap); Vertical Barriers (Slurry Walls) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HAU - Installation of Clay/Soil Cap	A	4	30	0.80	/SY-YR	130,000	SY	1,000	1,000	1,000	1,000	119,000	3,204,000	1,578,000
H - Long-Term Dewatering, Complex Trenches	A	4	30	50,214.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	57,000	1,547,000	781,000
HB - Site Reviews	A	4	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	6,000	168,000	82,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	4	30	0.13	/BCY-YR	7	BCY	1,000	1,000	1,000	1,000	1	30	10
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	4	30	0.13	/BCY-YR	17,000	BCY	1,000	1,000	1,000	1,000	3,000	88,000	33,000
Subtotal (P)												185,000	4,988,000	2,453,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects Overhead & Profit	COST CODE: LLSL Q = 0.390 * (P) 38.0%													
Contingency	R = 0.300 * (P+Q) 30.0%													
Subtotal (S = Q+R)												72,000	1,945,000	957,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												77,000	2,079,000	1,023,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)												149,000	4,024,000	1,979,000
HCT-05B.WQ1												334,000	9,010,000	4,432,000
SOILS DAA													37,200,000	29,600,000

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Table B5.9-14
RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kin); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT CAPITAL COSTS														
H - Excavation Dewatering, Shell Trenches	LS	1	-	172,685.00	/EA	EA	1.000	1.000	1.000		187,000	187,000	187,000	
H - Shell Trench Excavation Including Vapor Controls	LS	2	-	9,988,750.00	/EA	EA	1.000	1.000	1.000		11,398,000	11,398,000	10,856,000	
H - On-Post Hazardous Waste Landfill	LS	2	-	7.08	/BCY	BCY	1.000	1.000	1.000		808,000	808,000	768,000	
H - On-Post Hazardous Waste Landfill Closure	LS	2	-	4.72	/BCY	BCY	1.000	1.000	1.000		538,000	538,000	513,000	
Subtotal (A)												12,942,000	12,942,000	
INDIRECT CAPITAL COSTS														
COST CODE: UMMS														
Mob/Demob	3.9%	B = 0.039 * (A)												
Indirects, Overhead & Profit	37.6%	C = 0.378 * (A+B)												
Engineering Design	4.5%	D = 0.045 * (A+B+C)												
Resident Engineering	1.5%	E = 0.015 * (A+B+C)												
Contingency	27.5%	F = 0.275 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												12,086,000	11,519,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Incineration	A	1	2	72.34	/BCY	BCY	1.000	1.000	1.000		8,255,000	8,255,000	8,059,000	
Subtotal (A1)												8,255,000	8,059,000	
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												5,231,000	5,106,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												36,514,000	37,020,000	
HST-14.W01														
SOILS DAA														
16-Jul-93														

Table B5.9-14 RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Shell Trenches Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln): Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	Annual Cost	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
H - Excavation Dewatering, Shell Trenches	A	1	3	452.612.00	/EA-YR		1				EA				
H - Excavation of Cover Overburden	LS	2	-	1.89	/BCY		31,000	1.000	1.000	1.000	BCY	1,550,000	1,477,000	64,000	1,477,000
H - Shell Trench Excavation Including Vapor Controls	LS	3	-	88.42	/BCY		100,000	1.000	1.000	1.000	BCY	10,000,000	8,152,000	10,000,000	8,152,000
H - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	-	1.07	/BCY-MILE		100,000	1.000	1.000	1.300	Productivity	159,000	144,000	159,000	144,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	-	1.35	/BCY		100,000	1.000	1.000	1.000	BCY	177,000	160,000	177,000	160,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	-	1.07	/BCY-MILE		100,000	1.000	1.000	1.300	Productivity	159,000	144,000	159,000	144,000
H - On-Post Hazardous Waste Landfill	LS	3	-	3.93	/BCY		100,000	1.000	1.000	1.000	BCY	448,000	407,000	448,000	407,000
H - Excavation of Borrow Material	LS	3	-	1.89	/BCY		100,000	1.000	1.000	1.000	BCY	216,000	198,000	216,000	198,000
H - Transportation of Borrow Material to Backfill Area	LS	3	-	0.86	/BCY-MILE		100,000	1.000	1.500	1.000	BCY	147,000	134,000	147,000	134,000
H - Backfill with Borrow Material	LS	3	-	1.72	/BCY		100,000	1.000	1.000	1.000	BCY	196,000	178,000	196,000	178,000
H - Backfill of Cover Overburden	LS	3	-	1.72	/BCY		31,000	1.000	1.000	1.000	BCY	61,000	55,000	61,000	55,000
H - Revegetation of Disturbed Areas	LS	3	-	0.18	/SY		32,000	1.000	1.000	1.100	Disturbance	7,000	7,000	7,000	7,000
Subtotal (I)													13,277,000	12,117,000	
INDIRECT O&M COSTS (OPERATIONS)															
COST CODE: HMLS															
Mod/Demob															
Indirects, Overhead & Profit	5.1%												680,000	621,000	
Engineering Design	39.0%												5,443,000	4,998,000	
Resident Engineering	1.5%												291,000	268,000	
Contingency	2.0%												398,000	354,000	
	31.3%												6,275,000	5,727,000	
Subtotal (O = J+K+L+M+N)													13,077,000	11,935,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Incineration	LS	3	-	201.09	/BCY		100,000	1.000	1.000	1.000	BCY	22,946,000	20,814,000		
Subtotal (I1)													22,946,000	20,814,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
COST CODE: D															
Mod/Demob															
Contractor Markup	0.0%												0	0	
Engineering Design	10.0%												2,295,000	2,081,000	
Resident Engineering	0.0%												0	0	
Contingency	2.0%												505,000	458,000	
	40.0%												10,295,000	9,341,000	
Subtotal (O1 = J1+K1+L1+M1+N1)													13,095,000	11,861,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)													62,400,000	56,747,000	

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	100,000	BCY	1.000	1.000	1.000		15,000	415,000	210,000
Subtotal (P)														
													15,000	415,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
													6,000	162,000
													6,000	173,000
													12,000	335,000
Subtotal (S = Q+R)													27,000	751,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														380,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)													102,000,000	94,100,000
HST-14 W01														
SOILS DAA														

Table B5.10-14 RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill	LS	2	--	7.08	/BCY	3,300	BCY	1,000	1,000	1,000		27,000	27,000	25,000
H - On-Post Hazardous Waste Landfill Closure	LS	2	--	4.72	/BCY	3,300	BCY	1,000	1,000	1,000		18,000	18,000	17,000
H - Hex Pit Excavation Including Vapor Controls	LS	2	--	499,437.00	/EA	1	EA	1,000	1,000	1,000		570,000	570,000	543,000
Subtotal (A)												614,000	585,000	
INDIRECT CAPITAL COSTS														
COST CODE: LMSS														
Mob/Demob	3.9%	B = 0.039 * (A)												
Indirects, Overhead & Profit	39.0%	C = 0.390 * (A+B)												
Engineering Design	4.5%	D = 0.045 * (A+B+C)												
Resident Engineering	1.5%	E = 0.015 * (A+B+C)												
Contingency	27.5%	F = 0.275 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												595,000	557,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Incineration	A	1	2	72.34	/BCY	3,300	BCY	1,000	1,000	1,000		272,000	272,000	266,000
Subtotal (A1)												272,000	266,000	
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
Mob/Demob	2.0%	B1 = 0.020 * (A1)												
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)												
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)												
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)												
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												173,000	169,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												1,644,000	1,576,000	

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SOILS DAA

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Table B5.10-14 RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kbin); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Hex Pit Excavation Including Vapor Controls	LS	3	--	100.07	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	377,000	377,000	342,000
H - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	3,300	BCY	1,000	0.500	1,300	Productivity	3,000	3,000	2,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	5,000	5,000	5,000
H - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3,300	BCY	1,000	1,000	1,300	Productivity	5,000	5,000	5,000
H - On-Post Hazardous Waste Landfill	LS	3	--	3.93	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	15,000	15,000	13,000
H - Excavation of Borrow Material	LS	3	--	1.89	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	7,000	7,000	6,000
H - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	3,300	BCY	1,000	1,500	1,000	Productivity	5,000	5,000	4,000
H - Backfill with Borrow Material	LS	3	--	1.72	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	6,000	6,000	6,000
H - Installation of 6 inches of Topsoil	LS	3	--	3.24	/SY	1,000	SY	1,000	1,000	1,000	Disturbance	4,000	4,000	3,000
H - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	1,000	SY	1,000	1,000	1,100	Disturbance	200	200	200
Subtotal (I)												428,000	428,000	388,000
INDIRECT O&M COSTS (OPERATIONS)														
Mod/Demob	5.1%	COST CODE: HWSS												
Indirects, Overhead & Profit	41.5%	J = 0.061 * (I)												
Engineering Design	1.5%	K = 0.415 * (I+J)												
Resident Engineering	2.0%	L = 0.015 * (I+J+K)												
Contingency	31.3%	M = 0.020 * (I+J+K)												
Subtotal (O) = J+K+L+M+N												22,000	22,000	20,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Incineration	LS	3	--	201.09	/BCY	3,300	BCY	1,000	1,000	1,000	Productivity	757,000	757,000	687,000
Subtotal (II)												757,000	757,000	687,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mod/Demob	0.0%	COST CODE: D												
Contractor Markup	10.0%	J1 = 0.000 * (II)												
Engineering Design	0.0%	K1 = 0.100 * (II+J1)												
Resident Engineering	2.0%	L1 = 0.000 * (II+J1+K1)												
Contingency	40.0%	M1 = 0.020 * (II+J1+K1)												
Subtotal (OI) = J1+K1+L1+M1+N1												0	0	0
TOTAL O&M COSTS (OPERATIONS) (OO) = I+O+II+OI														
												2,064,000	2,064,000	1,863,000

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SOILS DAA

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Table B5.10-14 RESIZED ALTERNATIVE - Cost Estimate - Disposal Trenches Medium Group - Hex Pit Subgroup
Alternative 14: Incineration/Pyrolysis (Rotary Kiln); Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	3,300	BCY	1.000	1.000	1.000		500	14,000	7,000
Subtotal (P)														
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit Q = 0.390 * (P)														
Contingency R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
													3,720,000	3,450,000

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	1	--	7.08	/BCY	430,000	BCY	1.000	1.000	1.000		3,474,000	3,474,000	3,474,000
HB - On-Post Hazardous Waste Landfill Closure	LS	2	--	4.72	/BCY	430,000	BCY	1.000	1.000	1.000		2,316,000	2,316,000	2,208,000
Subtotal (A)												5,790,000	5,680,000	
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (G =B+C+D+E+F)												5,049,000	4,953,000	
TOTAL CAPITAL COSTS (H = A+G)												10,839,000	10,633,000	

Table B5.11-3 RESIZED ALTERNATIVE - Cost Estimate - Sanitary Landfills Medium Group
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
HB - Landfill Excavation	LS	2	--	3.91	/BCY	430,000	BCY	1.000	1.000	1.300	Productivity		2,494,000	2,375,000	
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	2	--	1.07	/BCY-MILE	430,000	BCY	1.000	3.000	1.300	Productivity		2,048,000	1,950,000	
HB - On-Post Hazardous Waste Landfill	LS	2	--	3.93	/BCY	430,000	BCY	1.000	1.000	1.000			1,928,000	1,837,000	
HB - Excavation of Borrow Material	LS	2	--	1.89	/BCY	430,000	BCY	1.000	1.000	1.000			827,000	883,000	
HB - Transportation of Borrow Material to Backfill Area	LS	2	--	0.86	/BCY-MILE	430,000	BCY	1.000	1.500	1.000			633,000	603,000	
HB - Backfill with Borrow Material	LS	2	--	1.72	/BCY	430,000	BCY	1.000	1.000	1.000			844,000	804,000	
HB - Installation of 6 Inches of Topsoil	LS	2	--	3.24	/SY	150,000	SY	1.000	1.000	1.000			555,000	528,000	
HB - Revegetation of Disturbed Areas	LS	2	--	0.18	/SY	150,000	SY	1.000	1.000	1.100	Disturbance		34,000	32,000	
												9,463,000	9,013,000		
INDIRECT O&M COSTS (OPERATIONS)															
Mod/Demob				3.9%										367,000	348,000
Indirects, Overhead & Profit				39.0%										3,834,000	3,651,000
Engineering Design				0.5%										68,000	65,000
Resident Engineering				1.5%										205,000	195,000
Contingency				27.5%										3,833,000	3,650,000
				Subtotal (I) = J+K+L+M+N									8,306,000	7,911,000	
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HB - On-Post Hazardous Waste Landfill Closure	A	2	30	0.13	/BCY-YR	430,000	BCY	1.000	1.000	1.000		64,000	1,850,000	966,000	
												64,000	1,850,000	966,000	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				39.0%										25,000	377,000
Contingency				30.0%										27,000	403,000
												51,000	1,483,000	779,000	
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]												115,000	21,113,000	18,689,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)													32,000,000	29,300,000	

HSL-03.W01
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RESIZED ALTERNATIVE - Cost Estimate - Lime Basins Medium Group - Section 36 Lime Basins Subgroup
Alternative 6d: Caps/Covers (Clay/Soil Cap) with Modifications to Existing Systems

[illegible]

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HBA - Subgrade Preparation Prior to Installing Cap/Cover	LS	1	--	0.06	/SY	63,000	SY	1.000	1.000	1.000		4,000		4,000
HBA - Modification of Existing Soil Cover	LS	1	--	22.80	/SY	63,000	SY	1.000	1.000	1.000		1,638,000		1,638,000
HBA - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	63,000	SY	1.000	1.000	1.100	Disturbance	14,000		14,000
Subtotal (I) = J+K+L+M+N														
													1,658,000	1,658,000
INDIRECT O&M COSTS (OPERATIONS)														
Indirects, Overhead & Profit	J = 0.033 * (I) K = 0.390 * (I+J) L = 0.005 * (I+J+K) M = 0.013 * (I+J+K) N = 0.263 * (I+J+K+L+M)													
Engineering Design														
Resident Engineering														
Contingency														
													54,000	54,000
													688,000	688,000
													12,000	12,000
													30,000	30,000
													635,000	635,000
													1,398,000	1,398,000
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HBA - Modification of Existing Soil Cover	A	1	30	0.80	/SY-YR	63,000	SY	1.000	1.000	1.000		58,000		914,000
HBA - Site Reviews	A	1	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000		98,000
													64,000	1,012,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit	Q = 0.390 * (P) R = 0.300 * (P+Q)													
Contingency														
													25,000	395,000
													27,000	422,000
													51,000	817,000
													115,000	4,886,000
													6,510,000	4,890,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
													6,510,000	4,890,000

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS													
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	1	BCY	1.000	1.000	1.000			10	10
A - On-Post Hazardous Waste Landfill Closure	LS	3	--	4.72	1	BCY	1.000	1.000	1.000			10	5
Subtotal (A)													
10													
INDIRECT CAPITAL COSTS													
COST CODE: LLSS													
Mob/Demob												0	0
Indirects, Overhead & Profit												10	10
Engineering Design												1	1
Resident Engineering												0	0
Contingency												10	5
Subtotal (G = B+C+D+E+F)													
10													
DIRECT SUBCONTRACT CAPITAL COSTS													
H - Cement-Based Solidification	LS	2	--	3.35	29,000	BCY	1.000	1.000	1.000			111,000	106,000
A - Incineration	A	1	2	72.34	29	BCY	1.000	1.000	1.000			2,000	2,000
Subtotal (A1)													
113,000													
INDIRECT SUBCONTRACT CAPITAL COSTS													
COST CODE: C													
Mob/Demob												2,000	2,000
Contractor Markup												12,000	11,000
Engineering Design												11,000	11,000
Resident Engineering												4,000	4,000
Contingency												43,000	41,000
Subtotal (G1 = B1+C1+D1+E1+F1)													
72,000													
TOTAL CAPITAL COSTS (H = A+G+A1+G1)													
185,000													
HBMI-10.W01													
SOILS DAA													
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Table B5.13-10 RESIZED ALTERNATIVE - Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1997 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	Total Cost	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)																	
H - Soil Excavation	A	3	5	3.91	/BCY	29,000	BCY	1.000	1.000	1.200	Odor Control	155,000			155,000		134,000
H - Transportation of Contaminated Soil to Solidification Facility	A	3	5	1.07	/BCY-MILE	29,000	BCY	1.000	0.250	1.000		9,000			9,000		8,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	A	3	5	1.28	/BCY	29,000	BCY	1.000	1.000	1.000		51,000			51,000		44,000
H - Transportation of Treated Soil to Backfill Excavation	A	3	5	0.86	/BCY-MILE	29,000	BCY	1.000	0.250	1.000		9,000			9,000		7,000
H - Backfill with Treated Soil	A	3	5	1.72	/BCY	29,000	BCY	1.000	1.000	1.000		68,000			68,000		58,000
H - Soil Cover for Solidified Materials	A	3	5	9.14	/SY	8,600	SY	1.000	1.000	1.000	Disturbance	90,000			90,000		78,000
H - Revegetation of Disturbed Areas	A	3	5	0.18	/SY	8,600	SY	1.000	1.000	1.000		2,000			2,000		2,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	8,600	SY	1.000	1.000	1.000		48,000			48,000		44,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	29	BCY	1.000	1.000	1.200	Odor Control	200			200		200
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	29	BCY	1.000	0.250	1.000		10			10		10
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	BCY	1.000	1.000	1.000		2			2		2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1.000	1.000	1.000		1			1		1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	1	BCY	1.000	1.000	1.000		4			4		4
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	29	BCY	1.000	1.000	1.000		40			40		40
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	29	BCY	1.000	0.250	1.000		10			10		10
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	29	BCY	1.000	1.000	1.000		100			100		100
Subtotal (I)												432,000			432,000		375,000
INDIRECT O&M COSTS (OPERATIONS)																	
Mob/Demob				4.5%	J = 0.045 * (I)							19,000			19,000		17,000
Indirects, Overhead & Profit				41.5%	K = 0.415 * (I+J)							187,000			187,000		163,000
Engineering Design				0.5%	L = 0.005 * (I+J+K)							3,000			3,000		3,000
Resident Engineering				1.8%	M = 0.018 * (I+J+K)							11,000			11,000		10,000
Contingency				30.0%	N = 0.300 * (I+J+K+L+M)							196,000			196,000		170,000
Subtotal (O) = J+K+L+M+N												417,000			417,000		362,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
H - Cement-Based Solidification	A	3	5	70.10	/BCY	29,000	BCY	1.000	1.000	1.000		2,320,000			2,320,000		2,008,000
A - Incineration	LS	3	--	201.09	/BCY	29	BCY	1.000	1.000	1.000		7,000			7,000		6,000
Subtotal (H)												2,327,000			2,327,000		2,012,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)																	
Mob/Demob				0.0%	J1 = 0.000 * (H)							0			0		0
Contractor Markup				10.0%	K1 = 0.100 * (H+J1)							233,000			233,000		201,000
Engineering Design				0.0%	L1 = 0.000 * (H+J1+K1)							0			0		0
Resident Engineering				2.0%	M1 = 0.020 * (H+J1+K1)							51,000			51,000		44,000
Contingency				40.0%	N1 = 0.400 * (H+J1+K1+L1+M1)							1,044,000			1,044,000		903,000
Subtotal (O1) = J1+K1+L1+M1+N1												1,328,000			1,328,000		1,148,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+H1+O1)												4,593,000			4,593,000		3,898,000

Table B5.13-10 RESIZED ALTERNATIVE - Cost Estimate - Lime Basins Medium Group - Buried M-1 Pits Subgroup
Alternative 10: Direct Solidification/Stabilization (Cement-Based Solidification)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - Long Term Monitoring of Solidified Soil	A	5	30	0.25	/SY-YR	8,600	1,000	1,000	1,000	1,000	1,000	2,000	64,000	30,000
H - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1,000	1,000	1,000	1,000	6,000	173,000	87,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000	1,000	0	4	2
Subtotal (P)														
												9,000	238,000	118,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects: Overhead & Profit 38.0% Q = 0.380 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
												3,000	92,000	48,000
												4,000	99,000	49,000
Subtotal (S = Q+R)												7,000	191,000	96,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												16,000	427,000	213,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)														
												5,120,000	4,290,000	

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Table BS.14-6a

RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup

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Alternative 6a: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	3,200	BCY	1.000	1.000	1.000	1.000	28,000	28,000	25,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	3,200	BCY	1.000	1.000	1.000	1.000	17,000	17,000	16,000
Subtotal (A)												45,000	45,000	40,000
INDIRECT CAPITAL COSTS														
Mob/Demob													1,000	1,000
Indirects, Overhead & Profit													17,000	16,000
Engineering Design													2,000	2,000
Resident Engineering													1,000	1,000
Contingency													17,000	16,000
Subtotal (G = B+C+D+E+F)												38,000	38,000	36,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Desorption (Saturated Soil)	A	1	2	34.85	/BCY	320,000	BCY	1.000	1.000	1.000	1.000	12,728,000	12,728,000	12,423,000
H - Cement-Based Solidification	LS	2	--	3.35	/BCY	4,000	BCY	1.000	1.000	1.000	1.000	15,000	15,000	15,000
Subtotal (A1)												12,742,000	12,742,000	12,438,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
Mob/Demob													255,000	249,000
Contractor Markup													1,300,000	1,289,000
Engineering Design													1,287,000	1,256,000
Resident Engineering													428,000	419,000
Contingency													4,803,000	4,689,000
Subtotal (G1 = B1+C1+D1+E1+F1)												8,073,000	7,881,000	7,881,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												20,896,000	20,896,000	20,365,000

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Table BS.14-6a RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup
Alternative 6a: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)															
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	87,000	87,000	SV	1.000	1.000	1.000	1.000	465,000	465,000	440,000
H - Soil Excavation	LS	3	--	3.91	/BCY	320,000	320,000	BCY	1.000	1.000	1.000	1.000	1,713,000	1,713,000	1,554,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	320,000	320,000	BCY	1.000	0.250	1.000	1.000	98,000	98,000	88,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3,200	3,200	BCY	1.000	1.000	1.000	1.000	6,000	6,000	5,000
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3,200	3,200	BCY	1.000	1.000	1.000	1.000	4,000	4,000	4,000
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	3,200	3,200	BCY	1.000	1.000	1.000	1.000	14,000	14,000	13,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	320,000	320,000	BCY	1.000	1.000	1.000	1.000	467,000	467,000	424,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	320,000	320,000	BCY	1.000	0.250	1.000	1.000	79,000	79,000	71,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	320,000	320,000	BCY	1.000	1.000	1.000	1.000	628,000	628,000	570,000
H - Soil Excavation	LS	3	--	3.91	/BCY	4,000	4,000	BCY	1.000	1.000	1.000	1.000	21,000	21,000	19,000
H - Transportation of Contaminated Soil to Solidification Facility	LS	3	--	1.07	/BCY-MILE	4,000	4,000	BCY	1.000	0.250	1.000	1.000	1,000	1,000	1,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	4,000	4,000	BCY	1.000	1.000	1.000	1.000	7,000	7,000	6,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	4,000	4,000	BCY	1.000	0.250	1.000	1.000	1,000	1,000	1,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	4,000	4,000	BCY	1.000	1.000	1.000	1.000	9,000	9,000	9,000
HB - Subgrade Preparation Prior to Installing Cap/Cover	LS	2	--	0.06	/SY	230,000	230,000	SY	1.000	1.000	1.000	1.000	16,000	16,000	15,000
HBA - Installation of Clay/Soil Cap	A	3	4	23.30	/SY	230,000	230,000	SY	1.000	1.000	1.000	1.000	6,116,000	6,116,000	5,415,000
HBA - Revegetation of Disturbed Areas	A	3	4	0.18	/SY	230,000	230,000	SY	1.000	1.000	1.000	1.000	52,000	52,000	46,000
Subtotal (I)														9,718,000	8,682,000
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				3.9%	J = 0.039 * (I)										
Indirects, Overhead & Profit				37.8%	K = 0.378 * (I+J)										
Engineering Design				0.5%	L = 0.005 * (I+J+K)										
Resident Engineering				1.5%	M = 0.015 * (I+J+K)										
Contingency				27.5%	N = 0.275 * (I+J+K+L+M)										
Subtotal (O = J+K+L+M+N)														8,366,000	7,474,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
H - Thermal Desorption (Saturated Soil)	LS	3	--	93.33	/BCY	320,000	320,000	BCY	1.000	1.000	1.000	1.000	34,082,000	34,082,000	30,913,000
H - Cement-Based Solidification	LS	3	--	70.10	/BCY	4,000	4,000	BCY	1.000	1.000	1.000	1.000	320,000	320,000	290,000
Subtotal (II)														34,402,000	31,203,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)															
Mob/Demob				0.0%	J1 = 0.000 * (II)										
Contractor Markup				10.0%	K1 = 0.100 * (II+J1)										
Engineering Design				0.0%	L1 = 0.000 * (II+J1+K1)										
Resident Engineering				2.0%	M1 = 0.020 * (II+J1+K1)										
Contingency				40.0%	N1 = 0.400 * (II+J1+K1+L1+M1)										
Subtotal (O1 = J1+K1+L1+M1+N1)														19,636,000	17,811,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+II+O1)														72,122,000	65,170,000

Table B5.14-6a

RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Central Processing Area Subgroup

Alternative 6a: Direct Thermal Desorption (Direct Heating) and Direct Solidification/Stabilization (Cement-Based Solidification) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	3,200	BCY	1.000	1.000	1.000		500	13,000	7,000
H - Long Term Monitoring of Solidified Soil	A	3	30	0.25	/SY-YR	6,100	SY	1.000	1.000	1.000		2,000	49,000	26,000
HBA - Installation of Clay/Soil Cap	A	3	30	0.80	/SY-YR	230,000	SY	1.000	1.000	1.000		210,000	5,879,000	2,879,000
HBA - Site Reviews	A	3	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	173,000	87,000
Subtotal (P)												218,000	6,114,000	3,098,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Indirects, Overhead & Profit												85,000	2,394,000	1,208,000
Contingency												91,000	2,549,000	1,292,000
Subtotal (S = Q+R)												176,000	4,943,000	2,500,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)												395,000	11,048,000	5,598,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = I+O+T)													104,000,000	91,200,000

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Table B5.15-6b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost		
DIRECT CAPITAL COSTS																
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	-	7.08	/BCY	63	BCY	1.000	1.000	1.000			1,000	500		
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	-	4.72	/BCY	63	BCY	1.000	1.000	1.000			300	300		
Subtotal (A)													1,000	1,000		
INDIRECT CAPITAL COSTS																
COST CODE: LLLS																
Mod/Demob	3.3%	B = 0.033 * (A)													30	30
Indirects, Overhead & Profit	36.5%	C = 0.365 * (A+B)													300	300
Engineering Design	3.0%	D = 0.030 * (A+B+C)													40	40
Resident Engineering	1.3%	E = 0.013 * (A+B+C)													10	10
Contingency	26.3%	F = 0.263 * (A+B+C+D+E)													300	300
Subtotal (G = B+C+D+E+F)													1,000	1,000		
DIRECT SUBCONTRACT CAPITAL COSTS																
H - Thermal Description (Dry Soil)	A	1	2	34.85	/BCY	6,300	BCY	1.000	1.000	1.000			251,000	245,000		
Subtotal (A1)													251,000	245,000		
INDIRECT SUBCONTRACT CAPITAL COSTS																
COST CODE: C																
Mod/Demob	2.0%	B1 = 0.020 * (A1)													5,000	5,000
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													26,000	25,000
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													25,000	25,000
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													8,000	8,000
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													94,000	92,000
Subtotal (G1 = B1+C1+D1+E1+F1)													158,000	155,000		
													411,000	401,000		

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Table B5.15-6b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	LS	3	--	3.91	/BCY	6,300	BCY	1.000	1.000	1.000		28,000	25,000	
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		4,000	3,000	
H - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	63	BCY	1.000	1.000	1.000		100	100	
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	63	BCY	1.000	1.000	1.000		100	100	
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	63	BCY	1.000	1.000	1.000		300	300	
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	6,300	BCY	1.000	1.000	1.000		8,000	8,000	
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	6,300	BCY	1.000	0.500	1.000		3,000	3,000	
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	6,300	BCY	1.000	1.000	1.000		12,000	11,000	
HB - Soil Excavation	LS	3	--	3.91	/BCY	190,000	BCY	1.000	1.000	1.000		848,000	789,000	
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	1.07	/BCY-MILE	190,000	BCY	1.000	0.750	1.000		174,000	158,000	
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	3.63	/BCY	190,000	BCY	1.000	1.000	1.000		787,000	714,000	
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	190,000	BCY	1.000	1.000	1.000		410,000	372,000	
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	190,000	BCY	1.000	1.500	1.000		280,000	254,000	
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	190,000	BCY	1.000	1.000	1.000		338,000	300,000	
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	93,000	SY	1.000	1.000	1.000		344,000	312,000	
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	93,000	SY	1.000	1.000	1.100	Disturbance	21,000	19,000	
Subtotal (f)												3,293,000	2,987,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				COST CODE: MLMS										
Indirects: Overhead & Profit	3.9%				$J = 0.039 * (f)$									
Engineering Design	38.0%				$K = 0.380 * (f+J)$									
Resident Engineering	0.5%				$L = 0.005 * (f+J+K)$									
Contingency	1.5%				$M = 0.015 * (f+J+K)$									
	27.5%				$N = 0.275 * (f+J+K+L+M)$									
Subtotal (O = J+K+L+M+N)												1,334,000	1,210,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	93.33	/BCY	6,300	BCY	1.000	1.000	1.000		671,000	609,000	
Subtotal (f1)												671,000	609,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				COST CODE: D										
Contractor Markup	0.0%				$J1 = 0.000 * (f1)$									
Engineering Design	10.0%				$K1 = 0.100 * (f1+J1)$									
Resident Engineering	0.0%				$L1 = 0.000 * (f1+J1+K1)$									
Contingency	2.0%				$M1 = 0.020 * (f1+J1+K1)$									
	40.0%				$N1 = 0.400 * (f1+J1+K1+L1+M1)$									
Subtotal (O1 = J1+K1+L1+M1+N1)												383,000	347,000	
												7,238,000	6,565,000	

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Table B5.15-6b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Ditches Subgroup
Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	3	30	0.00	/SY	93,000	SY	1,000	1,000	1,000		0	0	0
H - On Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	63	BCY	1,000	1,000	1,000		10	300	100
Subtotal (P)														
												10	300	100
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit 30.0% Q = 0.390 * (P)														
Contingency 30.0% R = 0.300 * (P+Q)														
Subtotal (S = Q+R)														
												4	100	100
												4	100	100
												10	200	100
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)														
												20	500	200
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+OO+T)														
													7,650,000	6,970,000

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Table B5.16-16a RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Tank Farm Area Subgroup
Alternative 16a: In Situ Physical/Chemical Treatment (Vacuum Extraction)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
11 - Soil Vapor Extraction	LS	1	--	1,053,000.00	/EA	1	EA	1.000	1.000	1.000		1,202,000	1,202,000	1,202,000
Subtotal (A)														
INDIRECT CAPITAL COSTS														
Mob/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
Subtotal (B) = B+C+D+E+F														
TOTAL CAPITAL COSTS (H = A+B)														
													1,202,000	1,202,000
													36,000	36,000
													464,000	464,000
													52,000	52,000
													22,000	22,000
													472,000	472,000
													1,068,000	1,068,000
													2,270,000	2,270,000

TOTAL CAPITAL COSTS (H = A+B)

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Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1992 (\$)	1995 (\$)	1995 (\$)
RECT O&M COSTS (OPERATIONS)														
H - Soil Vapor Extraction	A	1	10	2.97	/SY-YR	73,000	SY	1.000	1.000	1.000			2,474,000	2,008,000
B - Agricultural Practices	LS	1	--	0.20	/SY	21,000	SY	1.000	1.000	1.000			5,000	5,000
H - Load Treated Soil for Transport to Hazardous Landfill	LS	1	--	1.55	/BCY	98,720	BCY	1.000	1.000	1.000			175,000	175,000
H - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	98,720	BCY	1.000	0.500	1.000			80,000	80,000
H - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	98,720	BCY	1.000	1.000	1.000			408,000	409,000
Subtotal (I)														
													3,123,000	2,655,000
DIRECT O&M COSTS (OPERATIONS)														
Mod/Demob														
Indirects, Overhead & Profit														
Engineering Design														
Resident Engineering														
Contingency														
													101,000	88,000
													1,257,000	1,069,000
													22,000	19,000
													78,000	67,000
													1,375,000	1,169,000
													2,835,000	2,410,000
RECT O&M COSTS (LONG-TERM ACTIVITIES)														
H - No Action	A	11	30	0.00	/SY	73,000	SY	1.000	1.000	1.000		0	0	0
B - Long Term Soil Monitoring South Plants Tank Farm	A	2	30	16,000.00	/EA-YR	1	EA	1.000	1.000	1.000		18,000	530,000	276,000
B - Site Reviews	A	2	30	5,400.00	/EA-YR	1	EA	1.000	1.000	1.000		6,000	179,000	93,000
													24,000	708,000
													10,000	278,000
													10,000	295,000
													20,000	572,000
													44,000	7,237,000
													9,510,000	8,000,000
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]														
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)														

Table B5.17-6b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Description (Direct Heating) of Principal Threat Volume: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT CAPITAL COSTS														
H - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	190	BCY	1.000	1.000	1.000		2,000	2,000	1,000
H - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	190	BCY	1.000	1.000	1.000		1,000	1,000	1,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	1	BCY	1.000	1.000	1.000		10	10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	1	BCY	1.000	1.000	1.000		10	10	5
U - On-Post Solid Waste Landfill	LS	2	--	7.08	/BCY	5,000	BCY	1.000	1.000	1.000		40,000	40,000	38,000
U - On-Post Solid Waste Landfill	LS	3	--	4.72	/BCY	5,000	BCY	1.000	1.000	1.000		27,000	27,000	24,000
Subtotal (A)												70,000	70,000	65,000
INDIRECT CAPITAL COSTS														
MOB/DEMOS														
COST CODE: LLSS														
3.3%	B = 0.033 * (A)													
39.0%	C = 0.390 * (A+B)													
3.0%	D = 0.030 * (A+B+C)													
1.3%	E = 0.013 * (A+B+C)													
26.3%	F = 0.263 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)												62,000	62,000	58,000
DIRECT SUBCONTRACT CAPITAL COSTS														
H - Thermal Description (Dry Soil)	A	1	2	34.85	/BCY	19,000	BCY	1.000	1.000	1.000		756,000	756,000	738,000
A - Incineration	A	1	2	72.34	/BCY	140	BCY	1.000	1.000	1.000		12,000	12,000	11,000
Subtotal (A1)												767,000	767,000	749,000
INDIRECT SUBCONTRACT CAPITAL COSTS														
COST CODE: C														
2.0%	B1 = 0.020 * (A1)													
10.0%	C1 = 0.100 * (A1+B1)													
9.0%	D1 = 0.090 * (A1+B1+C1)													
3.0%	E1 = 0.030 * (A1+B1+C1)													
30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)												496,000	496,000	475,000
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												1,385,000	1,385,000	1,347,000

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Table B5.17.4b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Soil Excavation	LS	3	--	3.91	/BCY	19,000	BCY	1.000	1.000	1.200	Odor Control	102,000	102,000	86,000
H - Transportation of Contaminated Soil to Thermal Desorption Facility	LS	3	--	1.07	/BCY-MILE	19,000	BCY	1.000	1.000	1.000		23,000	23,000	21,000
H - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	190	BCY	1.000	1.000	1.000		300	300	300
H - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	190	BCY	1.000	1.000	1.000		200	200	200
H - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	190	BCY	1.000	1.000	1.000		1,000	1,000	1,000
H - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	19,000	BCY	1.000	1.000	1.000		28,000	28,000	25,000
H - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	19,000	BCY	1.000	1.000	1.000		19,000	19,000	17,000
H - Backfill with Treated Soil	LS	3	--	1.72	/BCY	19,000	BCY	1.000	1.000	1.000		37,000	37,000	34,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	700,000	BCY	1.000	1.000	1.200	Odor Control	3,746,000	3,746,000	3,400,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	1.07	/BCY-MILE	700,000	BCY	1.000	0.750	1.000		641,000	641,000	591,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	3.63	/BCY	700,000	BCY	1.000	1.000	1.000		2,800,000	2,800,000	2,630,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	700,000	BCY	1.000	1.000	1.000		1,510,000	1,510,000	1,369,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	700,000	BCY	1.000	1.500	1.000		1,030,000	1,030,000	935,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	700,000	BCY	1.000	1.000	1.000		1,374,000	1,374,000	1,246,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	620,000	SY	1.000	1.000	1.000		2,292,000	2,292,000	2,079,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	620,000	SY	1.000	1.000	1.100	Disturbance	140,000	140,000	127,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	140	BCY	1.000	1.000	1.200	Odor Control	1,000	1,000	1,000
A - Drilling and Agent Screening Prior to Excavation	LS	2	--	4.89	/SY	43,000	SY	1.000	1.000	1.000		240,000	240,000	229,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	140	BCY	1.000	1.000	1.000		200	200	200
A - Load Treated Soil for Transport to Hazardous Waste Landfill	LS	3	--	1.55	/BCY	1	BCY	1.000	1.000	1.000		2	2	2
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	1.07	/BCY-MILE	1	BCY	1.000	1.000	1.000		1	1	1
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	3.93	/BCY	1	BCY	1.000	1.000	1.000		4	4	4
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	1.28	/BCY	140	BCY	1.000	1.000	1.000		200	200	200
A - Backfill with Treated Soil	LS	3	--	0.86	/BCY-MILE	140	BCY	1.000	1.000	1.000		100	100	100
U - UXO Clearance by Geophysics	LS	3	--	1.72	/BCY	140	BCY	1.000	1.000	1.000		300	300	200
U - Removal of Soil with UXO	LS	2	--	0.85	/SY	15,000	SY	1.000	1.000	1.000		15,000	15,000	14,000
U - Excavation of Debris from Surface Soil	LS	3	--	70.57	/BCY	49	BCY	1.000	1.000	1.000	Productivity	4,000	4,000	4,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	3.91	/BCY	5,000	BCY	1.000	1.000	1.300	Productivity	29,000	29,000	26,000
U - On-Post Solid Waste Landfill	LS	3	--	0.71	/BCY-MILE	5,000	BCY	1.000	1.500	1.300	Productivity	8,000	8,000	7,000
Subtotal (I)				3.93	/BCY	5,000	BCY	1.000	1.000	1.000		22,000	22,000	20,000
												14,185,000	14,185,000	12,980,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob	4.5%	J = 0.045 * (I)										637,000	637,000	579,000
Indirects, Overhead & Profit	39.0%	K = 0.390 * (I+J)										5,773,000	5,773,000	5,241,000
Engineering Design	0.5%	L = 0.005 * (I+J+K)										103,000	103,000	93,000
Resident Engineering	1.8%	M = 0.018 * (I+J+K)										360,000	360,000	327,000
Contingency	30.0%	N = 0.300 * (I+J+K+L+M)										6,311,000	6,311,000	5,730,000
Subtotal (O = J+K+L+M+N)												13,185,000	13,185,000	11,970,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
H - Thermal Desorption (Dry Soil)	LS	3	--	93.33	/BCY	19,000	BCY	1.000	1.000	1.000		1,836,000	1,836,000	1,836,000
A - Incineration	LS	3	--	201.09	/BCY	140	BCY	1.000	1.000	1.000		32,000	32,000	29,000
U - Packaging and Transportation of HE Filled Uro to Army Off-Post Facility	LS	3	--	59.50	/BCY	49	BCY	1.000	1.000	1.000		3,000	3,000	3,000
Subtotal (I1)												2,069,000	2,069,000	1,968,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATION)														
Mob/Demob	0.0%	J1 = 0.000 * (I1)										0	0	0
Contractor Markup	10.0%	K1 = 0.100 * (I1+J1)										206,000	206,000	187,000
Engineering Design	0.0%	L1 = 0.000 * (I1+J1+K1)										0	0	0
Resident Engineering	2.0%	M1 = 0.020 * (I1+J1+K1)										45,000	45,000	41,000
Contingency	40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)										924,000	924,000	838,000
Subtotal (O1 = J1+K1+L1+M1+N1)												1,175,000	1,175,000	1,086,000
TOTAL O&M COSTS (OPERATIONS) [OO = I+O+I1+O1]												30,594,000	30,594,000	27,763,000

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Table B5.17-6b RESIZED ALTERNATIVE - Cost Estimate - South Plants Medium Group - South Plants Balance of Area Subgroup
Alternative 6b: Direct Thermal Desorption (Direct Heating) of Principal Threat Volume; Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
II - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30		0.13	/BCY-YR	190	BCY	1,000	1,000	1,000		30	1,000	400	0
HB - No Action	A	3	30		0.00	/SY	620,000	SY	1,000	1,000	1,000		0	0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30		0.13	/BCY-YR	1	BCY	1,000	1,000	1,000		0	4	2	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30		0.13	/BCY-YR	5,000	BCY	1,000	1,000	1,000		1,000	21,000	11,000	11,000
Subtotal (P)																
													1,000	22,000	11,000	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)																
Indirects, Overhead & Profit													300	8,000	4,000	
Contingency													300	8,000	5,000	
Subtotal (S = O+P)																
													1,000	17,000	9,000	
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (T = P+S)																
													1,000	39,000	20,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+T)																
														32,000,000	29,100,000	

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Table B5.18-6g
RESIZED ALTERNATIVE - Cost Estimate - Buried Sediment/Ditches Medium Group - Buried Sediment Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)		Units	Quantity	Units	Volume Mileage		Other Factor		Description	1993 (\$)		1995 (\$)	
				Unit Cost	Total Cost				Factor	Mileage	Factor	Factor		Annual Cost	Total Cost	PW Cost	
DIRECT CAPITAL COSTS																	
</																	

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Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost	
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	1	--	3.91	/BCY	180,000	BCY	1.000	1.000	1.000			803,000	803,000	
HB - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	180,000	BCY	1.000	2,000	1.000			440,000	440,000	
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	180,000	BCY	1.000	1,000	1.000			746,000	746,000	
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	180,000	BCY	1.000	1,000	1.000			398,000	398,000	
HB - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	180,000	BCY	1.000	1,300	1.000			265,000	265,000	
HB - Backfill with Borrow Material	LS	1	--	1.72	/BCY	180,000	BCY	1.000	1,000	1.000			353,000	353,000	
HB - Installation of 6 inches of Topsoil	LS	1	--	3.24	/SY	59,000	SY	1.000	1,000	1.000			218,000	218,000	
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	59,000	SY	1.000	1,000	1.100	Disturbance		13,000	13,000	
												3,228,000	3,228,000		
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob				J = 0.039 * (I)										125,000	125,000
Indirects, Overhead & Profit				K = 0.390 * (I+J)										1,307,000	1,307,000
Engineering Design				L = 0.005 * (I+J+K)										23,000	23,000
Resident Engineering				M = 0.015 * (I+J+K)										70,000	70,000
Contingency				N = 0.275 * (I+J+K+L+M)										1,307,000	1,307,000
												2,832,000	2,832,000		
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
HB - No Action	A	1	30	0.00	/SY	59,000	SY	1.000	1,000	1.000		0	0	0	
												0	0	0	
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)															
Indirects, Overhead & Profit				Q = 0.390 * (P)										0	0
Contingency				R = 0.300 * (P+Q)										0	0
												0	0	0	
TOTAL O&M COSTS (T = I+O+P+S) [Note: Total O&M Annual Cost Only Includes Long-Term Activities]															
												0	6,058,000	6,058,000	
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (U = H+T)															
													6,060,000	6,060,000	

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Table B5.19-6g
RESIZED ALTERNATIVE - Cost Estimate - Buried Sediment/Ditches Medium Group - Sand Creek Lateral Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

[illegible]

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)															
HB - Soil Excavation	LS	1	--	3.91	/BCY	39,000	BCY	1.000	1.000	1.000		174,000			174,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	1	--	1.07	/BCY-MILE	39,000	BCY	1.000	1.500	1.000		71,000			71,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	1	--	3.63	/BCY	39,000	BCY	1.000	1.000	1.000		162,000			162,000
HB - Excavation of Borrow Material	LS	1	--	1.89	/BCY	39,000	BCY	1.000	1.000	1.000		84,000			84,000
HB - Transportation of Borrow Material to Backfill Area	LS	1	--	0.86	/BCY-MILE	39,000	BCY	1.000	1.500	1.000		57,000			57,000
HB - Backfill with Borrow Material	LS	1	--	1.72	/BCY	39,000	BCY	1.000	1.000	1.000		77,000			77,000
HB - Installation of 6 Inches of Topsoil	LS	1	--	3.24	/SY	44,000	SY	1.000	1.000	1.000		163,000			163,000
HB - Revegetation of Disturbed Areas	LS	1	--	0.18	/SY	44,000	SY	1.000	1.000	1.100	Disturbance	10,000			10,000
												798,000			798,000
INDIRECT O&M COSTS (OPERATIONS)															
Mob/Demob															
Indirects, Overhead & Profit															
Engineering Design															
Resident Engineering															
Contingency															

Table B5.22-6g RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	Annual Cost	1995 (\$)	PW Cost
DIRECT CAPITAL COSTS															
H - Excavation Dewatering, Section 36 Balance of Areas	LS	1	--	344,499.00	/EA	1	EA	1.000	1.000	1.000		383,000		383,000	
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	3	BCY	1.000	1.000	1.000		20		20	
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	3	BCY	1.000	1.000	1.000		20		20	10
U - On-Post Solid Waste Landfill	LS	2	--	7.08	/BCY	70,000	BCY	1.000	1.000	1.000		598,000		539,000	
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	4.72	/BCY	70,000	BCY	1.000	1.000	1.000		377,000		342,000	
Subtotal (A)												1,336,000		1,274,000	
INDIRECT CAPITAL COSTS															
COST CODE: MMSS															
Mob/Demob	4.5%	B = 0.045 * (A)													
Indirects, Overhead & Profit	40.3%	C = 0.403 * (A+B)													
Engineering Design	4.5%	D = 0.045 * (A+B+C)													
Resident Engineering	1.6%	E = 0.016 * (A+B+C)													
Contingency	28.6%	F = 0.286 * (A+B+C+D+E)													
Subtotal (G = B+C+D+E+F)												1,342,000		1,280,000	
DIRECT SUBCONTRACT CAPITAL COSTS															
A - Incineration	A	1	2	72.34	/BCY	270	BCY	1.000	1.000	1.000		22,000		22,000	
Subtotal (A1)												22,000		22,000	
INDIRECT SUBCONTRACT CAPITAL COSTS															
COST CODE: C															
Mob/Demob	2.0%	B1 = 0.020 * (A1)													
Contractor Markup	10.0%	C1 = 0.100 * (A1+B1)													
Engineering Design	9.0%	D1 = 0.090 * (A1+B1+C1)													
Resident Engineering	3.0%	E1 = 0.030 * (A1+B1+C1)													
Contingency	30.0%	F1 = 0.300 * (A1+B1+C1+D1+E1)													
Subtotal (G1 = B1+C1+D1+E1+F1)												14,000		14,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												2,715,000		2,598,000	

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Table B5.22-6g RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$)	1995 (\$)	1995 (\$)	PW Cost
DIRECT O&M COSTS (OPERATIONS)														
H - Excavation Dewatering, Section 36 Balance of Areas	A	1	3	169,385.00	/EA-YR	1	1,000	1,000	1,000	EA	580,000	580,000	580,000	553,000
HB - Soil Excavation	LS	3	--	3.91	/BCY	390,000	1,000	1,000	1,000	BCY	1,740,000	1,740,000	1,740,000	1,578,000
HB - Transportation of Contaminated Soil to Consolidation Area	LS	3	--	1.07	/BCY-MILE	390,000	1,000	0.500	1,000	BCY	238,000	238,000	238,000	216,000
HB - Grade Filling w/Consolidated Soil Prior to Capping	LS	3	--	3.63	/BCY	390,000	1,000	1,000	1,000	BCY	1,816,000	1,816,000	1,816,000	1,485,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	390,000	1,000	1,000	1,000	BCY	841,000	841,000	841,000	783,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	390,000	1,000	1,500	1,000	BCY	574,000	574,000	574,000	521,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	390,000	1,000	1,000	1,000	BCY	765,000	765,000	765,000	684,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	640,000	1,000	1,000	1,000	SY	2,366,000	2,366,000	2,366,000	2,146,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	640,000	1,000	1,000	1,000	SY	145,000	145,000	145,000	131,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	89,000	1,000	1,000	1,000	SY	497,000	497,000	497,000	450,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	270	1,000	1,000	1,000	BCY	1,000	1,000	1,000	1,000
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	270	1,000	1,000	1,000	BCY	300	300	300	300
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	3	1,000	1,000	1,000	BCY	10	10	10	5
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	3	1,000	1,000	1,000	BCY	4	4	4	3
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	3	1,000	1,000	1,000	BCY	10	10	10	10
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	270	1,000	1,000	1,000	BCY	400	400	400	400
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	270	1,000	1,000	1,000	BCY	300	300	300	200
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	270	1,000	1,000	1,000	BCY	1,000	1,000	1,000	500
U - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	210,000	1,000	1,000	1,000	SY	204,000	204,000	204,000	194,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	140	1,000	1,000	1,000	BCY	11,000	11,000	11,000	10,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	70,000	1,000	1,000	1,300	BCY	408,000	408,000	408,000	388,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	70,000	1,000	1,500	1,300	BCY	111,000	111,000	111,000	100,000
U - On-Post Solid Waste Landfill	LS	3	--	3.93	/BCY	70,000	1,000	1,000	1,000	BCY	314,000	314,000	314,000	285,000
Subtotal (I)												10,411,000	9,479,000	
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				5.1%	J = 0.051 * (I)						534,000	534,000	486,000	
Indirects, Overhead & Profit				38.0%	K = 0.380 * (I+J)						4,288,000	4,288,000	3,896,000	
Engineering Design				1.5%	L = 0.015 * (I+J+K)						228,000	228,000	208,000	
Resident Engineering				2.0%	M = 0.020 * (I+J+K)						304,000	304,000	277,000	
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)						4,920,000	4,920,000	4,480,000	
Subtotal (O = J+K+L+M+N)												10,254,000	9,336,000	
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	201.09	/BCY	270	1,000	1,000	1,000	BCY	62,000	62,000	56,000	
U - Packaging and Transportation of Agent UXO to Army Off-Post UXO Facility	LS	3	--	2,200.00	/BCY	140	1,000	1,000	1,000	BCY	351,000	351,000	319,000	
Subtotal (I1)												413,000	375,000	
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				0.0%	J1 = 0.000 * (I1)						0	0	0	
Contractor Markup				10.0%	K1 = 0.100 * (I1+J1)						41,000	41,000	38,000	
Engineering Design				0.0%	L1 = 0.000 * (I1+J1+K1)						0	0	0	
Resident Engineering				2.0%	M1 = 0.020 * (I1+J1+K1)						9,000	9,000	8,000	
Contingency				40.0%	N1 = 0.400 * (I1+J1+K1+L1+M1)						186,000	186,000	168,000	
Subtotal (O1 = J1+K1+L1+M1+N1)												236,000	214,000	
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+I1+O1)												21,314,000	19,404,000	

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Table B5.22-6g RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Section 36 Balance of Area Subgroup
Alternative 6g: Caps/Covers (Clay/Soil Cap) with Consolidation

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - No Action	A	3	30	0.00	/SY	640,000	SY	1.000	1.000	1.000		0	0	0
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	70,000	BCY	1.000	1.000	1.000		10,000	281,000	147,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	3	BCY	1.000	1.000	1.000		0	10	10
Subtotal (P)														
												10,000	291,000	147,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
COST CODE: LLSL														
Indirects, Overhead & Profit												4,000	113,000	57,000
Contingency												4,000	121,000	61,000
Subtotal (S = O+R)														
												8,000	235,000	118,000
TOTAL O&M COSTS (LONG-TERM ACTIVITIES) (I = P+S)														
												19,000	526,000	268,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = I+O+T)														
													24,600,000	22,300,000

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Table B5.23-3 RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$)	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
				Unit Cost								Annual Cost	Total Cost	PW Cost
DIRECT CAPITAL COSTS														
HB - On-Post Hazardous Waste Landfill	LS	2	--	7.08	/BCY	31,000	BCY	1.000	1.000	1.000			250,000	236,000
HB - On-Post Hazardous Waste Landfill Closure	LS	3	--	4.72	/BCY	31,000	BCY	1.000	1.000	1.000			167,000	151,000
A - On-Post Hazardous Waste Landfill (Particulates)	LS	2	--	7.08	/BCY	1	BCY	1.000	1.000	1.000			10	10
A - On-Post Hazardous Waste Landfill Closure (Particulates)	LS	3	--	4.72	/BCY	1	BCY	1.000	1.000	1.000			10	5
U - On-Post Solid Waste Landfill	LS	2	--	7.08	/BCY	57,000	BCY	1.000	1.000	1.000			461,000	439,000
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	LS	3	--	4.72	/BCY	57,000	BCY	1.000	1.000	1.000			307,000	279,000
Subtotal (A)												1,185,000	1,107,000	
INDIRECT CAPITAL COSTS														
Indirects, Overhead & Profit	3.3%	COST CODE: LLSS												
Engineering Design	38.0%	B = 0.033 * (A)												
Resident Engineering	3.0%	C = 0.380 * (A+B)												
Contingency	1.3%	D = 0.030 * (A+B+C)												
	28.3%	E = 0.013 * (A+B+C)												
		F = 0.283 * (A+B+C+D+E)												
Subtotal (G = B+C+D+E+F)												1,053,000	994,000	
DIRECT SUBCONTRACT CAPITAL COSTS														
A - Incineration	A	1	2	72.34	/BCY	12	BCY	1.000	1.000	1.000			1,000	1,000
Subtotal (A1)												1,000	1,000	
INDIRECT SUBCONTRACT CAPITAL COSTS														
Indirects, Overhead & Profit	2.0%	COST CODE: C												
Engineering Design	10.0%	B1 = 0.020 * (A1)												
Resident Engineering	9.0%	C1 = 0.100 * (A1+B1)												
Contingency	3.0%	D1 = 0.080 * (A1+B1+C1)												
	30.0%	E1 = 0.030 * (A1+B1+C1)												
		F1 = 0.300 * (A1+B1+C1+D1+E1)												
Subtotal (G1 = B1+C1+D1+E1+F1)												1,000	1,000	
TOTAL CAPITAL COSTS (H = A+G+A1+G1)												2,240,000	2,093,000	

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Table B5.23-3 RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1995 (\$)	1995 (\$)	1995 (\$)
DIRECT O&M COSTS (OPERATIONS)														
HB - Soil Excavation	LS	3	--	3.91	/BCY	31,000	BCY	1,000	1,000	1,300	Productivity	180,000		183,000
HB - Transportation of Contaminated Soil to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	31,000	BCY	1,000	2,500	1,300	Productivity	123,000		112,000
HB - On-Post Hazardous Waste Landfill	LS	3	--	3.93	/BCY	31,000	BCY	1,000	1,000	1,000		139,000		128,000
HB - Excavation of Borrow Material	LS	3	--	1.89	/BCY	31,000	BCY	1,000	1,000	1,000		67,000		61,000
HB - Transportation of Borrow Material to Backfill Area	LS	3	--	0.86	/BCY-MILE	31,000	BCY	1,000	1,500	1,000		46,000		41,000
HB - Backfill with Borrow Material	LS	3	--	1.72	/BCY	31,000	BCY	1,000	1,000	1,000		61,000		55,000
HB - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	43,000	SY	1,000	1,000	1,000		159,000		144,000
HB - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	43,000	SY	1,000	1,000	1,000		10,000		9,000
A - Drilling and Agent Screening Prior to Excavation	LS	3	--	4.89	/SY	7,100	SY	1,000	1,000	1,000		40,000		36,000
A - Excavation of Soil with Agent	LS	3	--	4.55	/BCY	12	BCY	1,000	1,000	1,000		100		100
A - Transportation of Contaminated Soil to On-Post Incineration Facility	LS	3	--	1.07	/BCY-MILE	12	BCY	1,000	3,500	1,000		50		50
A - Load Treated Soil for Transport to Hazardous Landfill	LS	3	--	1.55	/BCY	1	BCY	1,000	1,000	1,000		2		2
A - Transportation of Particulates to On-Post Hazardous Waste Landfill	LS	3	--	1.07	/BCY-MILE	1	BCY	1,000	1,000	1,000		1		1
A - Load Nonhazardous Treated Soil from Stockpile for Backfill	LS	3	--	1.28	/BCY	1	BCY	1,000	1,000	1,000		1		1
A - On-Post Hazardous Waste Landfill (Particulates)	LS	3	--	3.93	/BCY	12	BCY	1,000	1,000	1,000		100		50
A - Transportation of Treated Soil to Backfill Excavation	LS	3	--	0.86	/BCY-MILE	12	BCY	1,000	3,500	1,000		40		40
A - Backfill with Treated Soil	LS	3	--	1.72	/BCY	12	BCY	1,000	1,000	1,000		20		20
A - UXO Clearance by Geophysics	LS	2	--	0.85	/SY	170,000	SY	1,000	1,000	1,000		185,000		157,000
U - Removal of Soil with UXO	LS	3	--	70.57	/BCY	550	BCY	1,000	1,000	1,000		44,000		40,000
U - Excavation of Debris from Surface Soil	LS	3	--	3.91	/BCY	57,000	BCY	1,000	1,000	1,300	Productivity	331,000		300,000
U - Transportation of Nonhaz. Soil/Debris to On-Post Nonhaz. Waste Landfill	LS	3	--	0.71	/BCY-MILE	57,000	BCY	1,000	2,500	1,300	Productivity	190,000		136,000
U - On-Post Solid Waste Landfill	LS	3	--	3.93	/BCY	57,000	BCY	1,000	1,000	1,000		256,000		232,000
U - Installation of 6 Inches of Topsoil	LS	3	--	3.24	/SY	110,000	SY	1,000	1,000	1,000		407,000		369,000
U - Revegetation of Disturbed Areas	LS	3	--	0.18	/SY	110,000	SY	1,000	1,000	1,100	Disturbance	25,000		23,000
Subtotal (I)													2,201,000	2,004,000
INDIRECT O&M COSTS (OPERATIONS)														
Mob/Demob				5.1%	J = 0.051 * (I)							113,000		103,000
Indirects Overhead & Profit				40.3%	K = 0.403 * (I+J)							931,000		848,000
Engineering Design				1.5%	L = 0.015 * (I+J+K)							44,000		44,000
Resident Engineering				2.0%	M = 0.020 * (I+J+K)							65,000		59,000
Contingency				31.3%	N = 0.313 * (I+J+K+L+M)							1,050,000		956,000
Subtotal (O) = J+K+L+M+N													2,207,000	2,009,000
DIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
A - Incineration	LS	3	--	201.09	/BCY	12	BCY	1,000	1,000	1,000		3,000		2,000
U - Packaging and Transportation of HE Filled UXO to Army Off-Post Facility	LS	3	--	59.50	/BCY	550	BCY	1,000	1,000	1,000		37,000		34,000
Subtotal (II)													40,000	36,000
INDIRECT SUBCONTRACT O&M COSTS (OPERATIONS)														
Mob/Demob				0.0%	J1 = 0.000 * (II)							0		0
Contractor Markup				10.0%	K1 = 0.100 * (II+J1)							4,000		4,000
Engineering Design				0.0%	L1 = 0.000 * (II+J1+K1)							0		0
Resident Engineering				2.0%	M1 = 0.020 * (II+J1+K1)							1,000		1,000
Contingency				40.0%	N1 = 0.400 * (II+J1+K1+L1+M1)							18,000		16,000
Subtotal (O1) = J1+K1+L1+M1+N1													23,000	21,000
TOTAL O&M COSTS (OPERATIONS) (OO = I+O+II+O1)													4,471,000	4,070,000

Table B5.23-3 RESIZED ALTERNATIVE - Cost Estimate - Undifferentiated Medium Group - Burial Trenches Subgroup
Alternative 3: Landfill (On-Post Landfill)

Cost Item	Cost Type	Start Year	End Year	1992 (\$) Unit Cost	Units	Quantity	Units	Volume Factor	Mileage Factor	Other Factor	Description	1993 (\$) Annual Cost	1995 (\$) Total Cost	1995 (\$) PW Cost
DIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
HB - On-Post Hazardous Waste Landfill Closure	A	3	30	0.13	/BCY-YR	31,000	BCY	1,000	1,000	1,000		5,000	128,000	66,000
A - On-Post Hazardous Waste Landfill Closure (Particulates)	A	3	30	0.13	/BCY-YR	1	BCY	1,000	1,000	1,000		0	4	2
U - On-Post Solid Waste Landfill, Closure and Post Closure Activities	A	3	30	0.13	/BCY-YR	57,000	BCY	1,000	1,000	1,000		8,000	237,000	120,000
Subtotal (P)														
													13,000	388,000
INDIRECT O&M COSTS (LONG-TERM ACTIVITIES)														
Subtotal (S = Q+R)														
													5,000	143,000
													5,000	152,000
													11,000	295,000
													24,000	681,000
														148,000
														395,000
														6,500,000
TOTAL CAPITAL COSTS AND TOTAL O&M COSTS (OPERATIONS & LONG-TERM ACTIVITIES) (U = H+O+S+T)														
													7,370,000	

HBT-03.WQ1
SOILS DAA

16-Jul-93